PECIALNEWSREPORT

Netscape's last big chance

and Dana Gardner NETSCAPE IS ON THIN ICE, and spring is fast approaching. The once auspicious Internet company must prove that it is financially viable and that it won't get pounded by Microsoft in the Web server market as it did with browsers. If not, Netscape will lose its remaining credibility with the IT managers whose dollars the company so desperately needs. ▶ Continued on page 18

Regarding Netscape Would you consider installing the majority of your intranet and Internet servers on Netscape products one year from now?



OURCE WORKSHOUP STRATEGIC SERVICES 1998 RIVEY OF 120 COMMANSES

IBM balances Web

'Nagano' to manage complex sites

By Laura Kujubu ond Dana Gardner

IBM HAS USED THE experience gained through building its own global network and its work at the Olympic games to create a bundle of software, code-name Nagano, designed to bring efficiency and flexibility to dispersed, heavily used

Web-based server networks. Due in beta release this week at the ISPCon show in Baltimore, the Nagano initiative uses load-balancing technology, proxy servers, and an enterprise file system to give large Internet service providers and corporate enterprises better control and performance from their multiserver, heterogeneous Web operations.

Nagano identifies weak or overburdened points in a multitiered and Internet-based network and adds server capacity and dynamic caching when it is most needed, according to Earl Mathis, product marketing manager for IBM's e-business

The problem of how to best match supply and demand in and among servers is affecting many organizations, users said. At Boeing, for example, it is a problem that is recognized but that has yet to be

"[Nagano] sounds cool," said Benny Ong, a senior principle scientist for Boeing's IS group in ► NAGANO page 22

Looking ahead: Could your department run smoothly after losing a key staff member? Find out how to make sure it will - and why

Bob Lewis says this planning will help your career, 79 &81 Fighting bloat: Keep your data mart lean and clean to improve its performance.

27 & 77

Next price war looms large

Intel pressures vendors | Servers glut hits market

By Dan Briody WHEN INTEL'S Mobile Pentium II processor debuts

on April 2, the chip giant has promised a wide variety of form factors and price points from notebook vendors that plan to base systems on the chip. But some vendors are singing a slightly different tune

While Compag, Dell, Hewlett-Packard, IBM, NEC, Toshiba, and others prepare notebooks based on the ▶ MOBILE PII page 22

By David Pendery

THE SPRING CLEANING of computer resellers' shelves and nimble moves from direct vendors such as Dell are pushing Intel-based server pricing to an all-time low. Compaq's recent warning of no expected profit for

its first quarter of 1998, based largely on excess inventory in the channel, showed that even the world's No. 1 PC vendor can trip in these highly competitive times.

Software distribution

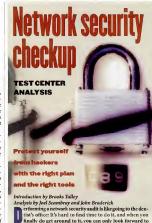
Microsoft to relax policy on OS cloning

By Ephraim Schwartz

AFTER SOME FITS and starts. Microsoft is planning to offer software that will help large corporate customers when they need to clone the Windows operating system across hundreds of PCs throughout the enterprise.

However, only corporate customers in the company's Select program, who have OS licenses for more than 1,000 desktops, will be offered the software utilities. In a deal hammered out last Jan-

uary, Microsoft met with key workstation-cloning companies such as Binary Research, Intelligent Computer Solutions (ICS), and Keylabs, and offered them a set of utilities that gives each Windows NT workstation a unique local domain security ID (SID) and identifies the unique hardware configuration of each Windows 98 desktop when using the workstation-cloning products. In essence, Microsoft would be sanctioning the cloning of the OS in some circumstances.



bad news. Of course, the benefits of an audit are much like

those of a dental checkup - advance notice of problems

▶ Continued on page 54

The goal of a security audit is to get an understanding of

can prevent them from becoming very serious if ignored.

▶ CLONING page 22 LOOK FOR NETWORKING EDITION INSIDE

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Operating systems

With Justice watching, Win98 to debut June 25

MICROSOFT IS PLANNING to send Windows 98 to manufacturing in mid-May and launch the next-generation operating system on June 25, according to sources close to the company.

The software giant has told PC vendors to circle that date on their calendars. In the meantime, these OEMs will be able to show the upgraded operating system on their systems at PC Expo, which begins June 16 in New York, but they will call it a beta version, sources said.

Meanwhile, the Department of Justice appears willing to let Microsoft proceed with Windows 98's release. But sources said the government might ask that Microsoft be required to offer a separate OS version without the Internet Explorer browser. In either case, the government will continue to investigate Microsoft's business practices for potential antitrust violations. "To assume that we have come to

an agreement on their providing two products would be way premature," said Michael Gordon, a spokesman at the Justice Department, in Washington, last week. Microsoft officials would not comment on the timing of Win98's release, except to say that it is still on track to ship by the end of June.

Contrary to reports that the company has been pushing to release the OS in April or May, recently some Microsoft officials, including Chairman Bill Gates at a congressional hearing on high-tech competition, have pointedly referred to a "summer" release.

Microsoft has contended that the Justice Department's lawsuit claiming anti-competitive business practices has not affected the development schedule for Windows 98. Spokesman Mark Murray would not comment on a report that the government was not inclined to block the shipment of Windows 98.

"We are working very closely with them, cooperating with them, trying to make sure they have all information they need to review these issues," Murray said, "We are optimistic that they will agree in the end that Internet Explorer is an integrated part of Windows 98," Microsoft will fully brief retail-

ers, OEMs, developers, and vendors on their Windows 98 rollout plans this week at a marketing conference in San Francisco.

An upgrade to Windows 95, Windows 98's chief enhancement is the integration of Explorer, a bone of contention with the Justice Department and rivals such as Netscape, which claims its browser business will suffer. The browser-OS integration will let users move from the Internet to a network or their hard drive within Explorer.

Other enhancements include a television broadcast architecture, and support for multiple monitors, digital video disc, and Universal Serial Rus connections

According to Microsoft's current plans. Win98 will be the last of the 9x line of Windows. The company plans to go forward with an OS plan based on Windows NT and will develop a consumer version of NT. Microsoft Corp., in Redmond, Wash., is at (425) 882-8080.

Ed Scannell, Ephraim Schwartz, and Dan Briody contributed to this

been so slow in backing the technology that allows IT sites to replicate the OS — a process known in

the industry as "workstation cloning" - is because of its rigid commitment to a "named user per specific license" philosophy. That policy may make sense in

the retail space where piracy is a problem. But in the corporate community, it only highlights Microsoft's ignorance of what its customers need to do in order to deploy thousands of PCs.

It also shows that the company fundamentally doesn't understand that to be a credible play-

er in the enterprise, you have to tailor your sales and marketing to fit the corporate customer. And any policy or marketing strategy that doesn't take this into account is going

to have limited success. So my question is, are we about to see Microsoft become more sophisticated in its approach to corporate customers, or is this just some sort of aberration that is accidentally benefiting customers?

Write to me at michael vizard@ infoworld.com.

NEWSBRIEFS

Lotus to ease migration to Notes

This week Lotus and its SoftSwitch division will announce a strategic messaging initiative designed to help corporations migrate to Lotus Notes and Domino from cc:Mail and other systems for enterprisewide messaging. Already, Lotus has pared-back development on cc:Mail and plans only maintenance upgrades of the product line. Notes 5.0 and Domino 5.0, expected midyear, will mark the effective merging of cc:Mail with Notes. This week, the company is expected to produce migration tools and incentives.

Oracle revenues rise by 27 percent

Oracle last week reported quarterly revenues that were 27 percent higher than the same period in 1997. The company had revenues of \$1.75 billion in the quarter that ended Feb. 28, as compared with \$1.37 billion in 1997's third fiscal quarter. Net income for the quarter was \$215 million, compared with an income of \$193 million in the same period in 1997. After the second-quarter report in December, analysts blamed the company's sluggish sales on a sales-force reorganization and competition from Windows NT databases, and warned its next few quarters could show weaker earnings than expected.

Netscape adds 'community' to Netcenter Netscape last week announced new features to its Netcenter Web

site, aiming to make it a technology community destination. Netcenter Professional Connections will offer forums on myriad subjects designed to spur more traffic and page views on the site, which is a major contributor to Netscape's overall revenues. Netscape has used software from Well Engaged for the forums. The free, registration-required forums will help build a Netcenter Member Directory Service, open to members for chats, forums, and e-mail,

Eastman gives Exchange document boost This week, Eastman Software will announce add-ons for Microsoft

Exchange 5.5 and Outlook '97 and '98 that provide advanced object foldering, management, and viewing. The company will ship Workfolder for Exchange for a price of \$149 per seat, and announced that Document Manager for Exchange will arrive in the second quarter for prices starting at \$3,000 per server and \$149 per seat. Eastman's Imaging for Windows Professional, which costs \$89 per seat, will enter beta release for Version 2.0 and ship in April. The products are designed to allow Exchange shops to create business applications that can access documents and objects from databases and Open Document Management API repositories.

New Sybase database will ship to ISVs Sybase this week plans to ship its Adaptive Server Enterprise 1

database, featuring row-level locking, to ISV partners such as PeopleSoft and Baan, according to an industry source familiar with Sybase's plans. No word is available on when users will get their hands on the new database.

Sales-force automation companies team Vantive and Trilogy are jointly marketing their sales-force automa-

tion products as a unified suite. Vantive Sales 7.5. Vantive will contribute software to help roving salespeople chase leads and look up company information on the Web. Trilogy looks up complex product configuration and pricing information and generates

> proposals. The suite is due in June, and pricing will be on a per-implementation basis.



For the latest IS news and updates, turn to InfoWorld Electric at http://www.infoworld.com

FROM THE NEWS DESK · MICHAEL VIZARD

Does Microsoft get the enterprise at last?

The biggest problem Microsoft has when dealing with corporate customers stems from its roots in the retail business. At its heart, Microsoft consid-

ers itself a supplier of high-volume commodity products that end-users buy at retail outlets.

The problem is that Microsoft's predisposition to selling everything in a "one size fits all" model means it tries to cram pricing and distribution strategies that make sense at the retail level down the throats of its corporate customers.

But the company may finally be learning. This week's Page One article by Ephraim Schwartz highlights Microsoft's plan to adopt a mirroring technology that will let IT managers replicate copies of an OS on workstations across the enterprise. Currently, Microsoft

contracts require IT managers to install a copy of the OS manually on every workstation. Replicating a copy of

the OS from a server would greatly simplify the administration costs associated with installing PCs and probably do more to reduce the total cost of ownership of PCs than any single initiative launched by Microsoft to date.

The reason that Microsoft has



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InfoMarket

THIS WEEK



Opinions in this issue

Bob Metcalfe efusion lets you browse the Web and talk on the phone with just one line.93



Sandy Reed The InfoWorld Reviews Board is part of our long heritage of serving readers' interests, 51

Laura Wonnacott It may be kludgey, but keywords on Dynamic HTML pages can get the attention of search engines. 33

- 3 Signs are pointing to June 25 as Windows 98's launch date, perhaps in two versions.
- 6 Oracles' latest entry in the Object Transaction Server market will be in beta release this
- 8 IBM will discuss its future plans for migrating Enterprise JavaBeans at the JavaOne confer-
- 14 Microsoft's move to thin clients advances with the heta release of Windows Terminal
- 14 Sapphire/Web Release S. Beta 1, shows promise with strong development and de-
- 20 Sony's ultralight Vaio notebook is slated for release in the United States in July.

CLIENT/SERVER

- 27 Quality and reliability are Increasing concerns for people building data warehouses.
- 27 Bug Report

ployment tools.

- 30 Street Prices: Pentium desktops
- 30 Voice technology is making its way to e-mail.
- 32 Lawson Software has announced a datawarehouse tool for customizing reports.

NETWORKING & TELECOM 37 Qwest and LCI announce a merger agreement to become a telecommunications nowerhouse.

- 37 Regulatory Roundup
- 38 Wireless data still struggles for acceptance
- 40 3Com and Siemens unveil the first fruits of their partnership: voice / data products.



For all the highlights of this week's InfoWorld Electric, go to http://www.infoworld.com.

FORUMS

Bundled browsers: Do they really benefit users?

- Age bias in IT?: How do you explain the disconnect between an industry starved for talent and talented professionals who can't
- Extensible Markup Language: Is XML
- poised to transform the Web? Java Lobby: Can the Java Lobby get Micro-
- soft to back down on its campaign to undermine Java's platform neutrality? OPINIONS

an IT director?

- Loose Cables: It's a password jungle out Advice Line: When does a company need
- PRODUCT REVIEWS

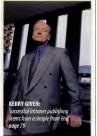
The beta release of ServerMax helps administrators get the most out of their network disk space

BOOK REVIEWS

Digital Fortress, by Dan Brown.

THE INFOWORLD SCOOP

 For a brief summary of the latest news. reviews, interviews, features, and forums, subscribe to our weekly newsletter, The InfoWorld Scoop, at http://www.infoworld .com/launch/register.htm.



INTERNET & I-COMMERCE

- 43 Sun's HotSpot will be among several JVMs introduced at the JavaOne show this month.
- 43 The Web Hotlist
 - 44 To be announced this month, the JC100 is the first all-purpose JavaBean organization.
- 44 Keynote Performance Index
- 46 Microsoft makes alliances to boost its document-management products.

TEST CENTER ANALYSIS

54 Network security audits are a great way to discover how secure your company's information systems really are. We looked at several tools that help you find out if you are suffering from a false sense of security.

ENTERPRISE COMPUTING

- 77 A well-focused data mart can help you fight excess bulge and will speed you up.
- 79 Mentor's Corner: Amoco Chemicals' key to a successful intranet was a simple front end.

ENTERPRISE CAREERS

81 With careful managing, you won't be left hanging when a staff member leaves.

PRODUCT REVIEWS

- 89 Microsoft Windows Terminal Server, beta
- 89 HPTopTools 3.0, beta 90 Microsoft Visual J++ 6.0, Technology Preview
- 92 Platinum SQL-Station/Team, Version 3.1
- 92 iPhone

OPINIONS 3 From the News Desk / Michael Vizord

- 32 Window Monoger / Brion Livingston
- 33 Test Center Rx / Laura Wonnacott
- 50 The Gripe Line / Ed Foster
- 50 To the Editor
- 51 From the Editor in Chief / Sondy Reed
- 51 InfoCryption
- 79 IS Survival Guide / Bob Lewis 93 From the Ether / Bob Metcalfe
- 93 Notes From the Field /

Robert X. Cringely 94 Down to the

Wire/Nicholas Petreley

Lines/Mork Tebbe





attempts to cross the data-

warehousing chasm, page 78

Preparing your IT team for future bumps in the road is instrumental

for its success, page 81



vour data mart, you may need to put it on a diet. page 77

To speed up





Du Miell MeVer

INVALUE MINELY

IDNA TECHNOLOGIES this week
plans to extend the reach of its
object technology, announcing a
deal with Hewlett-Packard to use
its object request broker (ORB) in
HP's network management software, and a new product to pull the
Irish company into the world of
multimedia

At its IonaWorld conference in Boston, the company will announce a deal to integrate Orbix ORB with HP's OpenView network management platform, sources close the company said. With this announcement, it appears that HP has joined you in killing off plans for developing homegrown ORBs in favor of licensing existing ones.

In addition, the company plans to announce ORB-based middleware, called Orbix MediaXchange (MX), that is designed to integrate audio, video, data, and telephony streams.

Orbix MX is based on I ona's protocol-independent ORB, code name Art. (See Tomba ART bridges protocols, March 9, page 6.) Orbix MX will take in an XTM networking stream and translate it into an ISDN stream on he fly, for example. This is similar to Art, which can perform tasks such as routing an object based on Microsoft's Component Object Model (COM) through to an Internet Intert-ORB Protocol-based environment.

"This new technology builds on our Object Transaction Server (DTS),"said Annrai O'Tole, Iona's founder and chief technology officer. "The OTS market is going to be very important over the next 12 months. IBM, Borland, BEA, Oracle are all just talking out their OTS offerings. We have one, it works,

and customers are buying it."
Iona's objective is to integrate
both the CORBA and Microsoft
camps, said Dr. Chris Horn, cofounder and CEO of Iona. The company recently licensed COM, which
competes with CORBA.

"Our [OTS] product will be able to coexist with Microsoft Transaction Server," Horn said.

However, one analyst believes lona's bid to ingratiate itself with Microsoft may isolate the company from the CORBA coalition.

"I believe that Iona [is] trying to get access to the underlying [Microsoft Transaction Servel] protocols," said Yasim Natis, an analyst at the Gartner Group, in Stamford, Conn. "This is a difficult game. Software AG has tried and failed."

Next week, Iona will announce plans to run objects written to Sun's Enterprise Java Beans specification on its Orbix Web and OTS products, sources said.

Iona Technologies Inc., in Dublin, Ireland, can be reached at http:// Object Transaction Server

Oracle server aims at high-end OTS market

By Niall McKay

ORACLE WILL JUMP into the growing Object Transaction Server (COTS) market and compete directly with companies such as Microsoft, IBM, and Iona with Version 4.0 of its Enterprise Application Server, scheduled for a beta release this summer, according to senior Oracle official visual processing to senior Oracle official visual visu

"We are currently building an OTS for integration with Application Server 4.0," said John Fomook, director of product marking for Oracle's Internet server product division. "But we have not decided how we will price the product vet."

Object Transaction Servers typically combine object request broker (ORB) middleware, a transactionprocessing monitor, and CORBA services such as security, naming, and directories

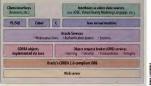
In the meantime, Oracle plans to release a beta version of its Oracle Application Server, Version 4.0, in April, officials said. This product will not include the OTS or CORBA services.

The Enterprise upgrade will include J/CORBA Cartridges, which is a similar component model to the server-based, transaction-enabled component model of Sun's Enterprise JavaBeans (EJB), according to Oracle officials.

"Later, when Sun releases the full specification, we will release an EJB patch for Application Server," Fomook said.

Oracle's object world

Orocle will odd on Object Tronsaction Server and CORBA services to Application Server 4.0



Application Server 4.0 is COR-BA 2.0-compliant and is based on an ORB written by Oracle engineers within the last year, according to officials.

Oracle in the past has licensed ORB vendor Visigenic's VisiBroker

for inclusion in its products, but has since also decided to build its own ORB from the ground up.

Oracle Corp., in Redwood Shores, Calif., can be reached at (650) 506-7000 or http://www.or acle.com.

SAP products target supply-chain needs

By Stannie Holt
ENTERPRISE resource planning

(ERP) software giant SAP last week unveiled products designed to do everything from placing an order through filling it at the factory to making sure there are enough supplies for the next batch.

In an unusual move, the products — including a supply-chaim module called Supply Chaim optimization, Planning, and Execution (SCOPE) first previewed in August; salesforce automation software that is not yet named, and Business Histormation Warchouse (BIW) for supply-chaim planning — are designed to work independently of SAP's flasship ERP Soution, R/3.

SCOPE will enter its pilot phase in July. Its first customer shipments will be in September, and it will be generally available by year's end.

The first customer shipments of
the sales-force automation product
are estimated for November.

BIW currently is being piloted. The product connects business processes and decision support and enables context-based demand management for supply-chain planning. It comes preloaded with business content enabling a wide range of analysis.

BIW will ship in April; the product will become generally available in July. SAP also announced liveCache.

a high-speed, memory-based technology for executing data-intensive functions. It will be at the heart of SAP's Advanced Planner and Optimizer (APO), which can analyze

production problems.

APO is scheduled for

pilot customer shipment in July, first customer shipment in September, and general availability by the end of this year.

SAP AG, in Walldorf, Germany, can be reached at http://www.sap.com.

Elinor Mills, a San Francisco editor for the IDG News Service, an Info-World affiliate, contributed to this article.

Cisco continues plunge into network markets

By Stephen Lawson

CISCO SYSTEMS last week continued a buying spree to expand its presence in key networking markets, announcing agreements to buy multimedia software vendor Precept Software and remote-access specialist NetSpeed.

In the process, the company tapped Precept's president and CEO Judith Estrin to be its new chief technology officer, following a decision by current chief technology officer Ed Kozel to become a part-time employee in order to spend more time with his family.

Observers said Cisco's acquisition of NetSpeed will give it a good foothold in the Digital Subscriber Line (DSL) market and may accelerate carriers' adoption of this type of service. DSL promises to provide remote access at speeds as high comtom of the composition of the composition of the DioMbps over conventional copper

telephone lin

"This is a proof point and a credibility boost for DSL, and for Cisco's own brand of DSL products," said Michael Howard, president of Infopetics Research in San Jose Call

netics Research, in San Jose, Callic The promise of interoperability with Cisco routers is likely to make DSL more attractive to Internet service providers, he added.

Cisco will acquire privately held NetSpeed, based in Austin, Texas, in a stock swap valued at approximately \$236 million.

Also last week, the internetworking giant bought Precept Software, maker of an application for sending multimedia traffic efficiently over LANs and WANs. Cisco's cost for the Palo Alto, Calif., company is ap-

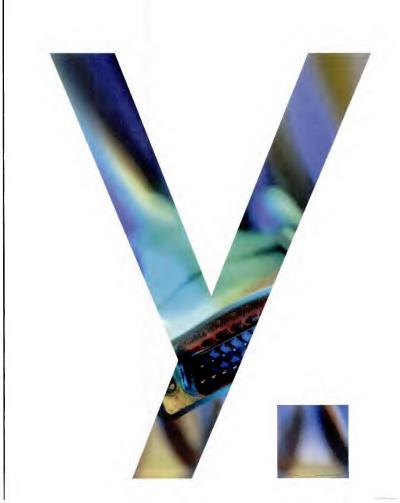
proximately \$84 million of stock. Officials said Cisco will continue to sell Precept's IP/TV product and by year's end will integrate its IP Multicast transmission software into the Internetworking Operating System, the core software for Cisco's switches and routers.

One Cisco official said the software will complement GiscoAssure, a technology announced last week for controlling security, access, and quality-of-service parameters through policies expressed in business terms. (See "Cisco clears a path," March 2, page 1.) The news that Precept's Estrin

will become chief technology officer at Cisco was welcomed by analysts, one of whom said that it signals continuity in Cisco's plans. "If anything, this will strengthen

their commitment to the voice and video space," said Frank Dzubeck, president of Communications Network Architects, in Washington.

Cisco Systems Inc., in San Jose, Calif., is at http://www.cisco.com. Chain Optimization, Planning, and Execution, SAP's new software.



IavaOne conference

IBM to detail Java strategy at JavaOne

By Niall McKay

AT THE IAVAONE trade show next week, IBM will announce Version 2.0 of its San Francisco framework and detail how it will migrate that technology into Enterprise JavaBeans (EJB), Sun's forthcoming server-side transaction-aware

component model. At issue is IBM's desire to implement one programming model across dozens of software solutions. and so the company has chosen server-side lava.

IBM will also demonstrate how its Component Broker Object Transaction Server software, Enceno and CICS transaction processing monitors will all run EIB.

"The problem with IBM is that they have all these competing software offerings, so which ones do they recommend to customers and which do they shoot in the head?" asked one IBM software partner who requested anonymity.

Meanwhile, the company will also demonstrate how its Visual Age application development tools can implement both client- and server-

side Java for the enterprise. The software giant has also developed an implementation of Sun's IBM's strategic plans

To be announced at JavaOne San Francisco framework, Version 2.0

AS/400 to become full-fledged Java

To be demonstrated at JavaOne Component Broker Object Transaction Server running Enterprise JavaBeans

Encena numino EIR

CICS transaction processing monitors

VisualAge tools for implementing client- and server-side Java

Java Transaction Server (JTS) API. The IBM JTS was developed by IBM's Hursley Facility in England and will enable heterogeneous twophase commit capabilities in the lava environment, IBM is also said to be working on the Java Messaging Specification (JMS). Both JTS and JMS will be included in Sun's Java for the Enterprise initiative at

IBM may also begin its push in its Java support program for developers through its Java User Groups.

Meanwhile, IBM has made public its plans to make AS/400 a full-

fledged lava server with appropriate application development tools.

Also planned for unveiling at the show will be an AS/400 Java virtual machine; an AS/400 Developer Kit for Java; an AS/400 Toolbox for Java; Visual Age for Java and San Francisco frameworks; Java servlet technology; and interoperability standards for NC devices and NC

One independent software vendor welcomed IBM's move to improve Java performance on the AS/400.

standards

"We would love to see new tools for the AS/400," said Dan Wilson, vice president of marketing for San Francisco-based Thought Inc. Meanwhile, some analysts believe IBM's strategy to employ Java in its

enterprise tools is adding credibility the platform. "Big Blue is not the type of animal that gets swept up in the reli-

gion of Java," said Ron Rappaport, an analyst at Zona Research, in Redwood City, Calif. IBM's strategy is end-to-end lava

so that it can unite software infra-

IBM, in Armonk, N.Y., can be reached at http://www.ibm.com.

ready for prime time. Intranet content management applications from NCompass Labs Through XML support, the dataand Chrystal Software use XML to separate form from content in their

XML comes of age in

business applications

developers hope that Peri

buted at Internet World last week. proving the technology may be

EXTENSIBLE MARKUP Language

(XML) made its appearance in sev-

By Jeff Walsh

applications. Database vendor Object Design announced it would add XML support to its database. And Perl and XML devel-

opers are working together to make Perl the scripting language for XML. NCompass Labs uses

XML to bring updated Web data to an Excel spreadsheet in its Resolution product. Resolution enables in-

tranet users to publish content simultaneously to an intranet, extranet, or the Internet. It uses a roles-based approach to

ensure the content is properly reviewed before posted online. It can be configured to match an existing corporate workflow. The product requires 32-bit Windows clients and a Windows NT Server, and it will be available in mid-April. Chrystal Software, a Xerox New

Enterprise company, will announce Astoria 3.0 this week at Seybold. The new version of the product formalizes its XML support to the XML 1.0 standard. The product also features an enhanced user interface that ensures the XML rendered by the product is valid.

Chrystal officials said XML is going to enrich the Web. "It's going to make it easier for

people to make their Web pages smarter and more available across applications," said Robin Gellerman. marketing manager at Chrystal. Object Design announced XML support to its database last week,

enabling management of specialized XML data tags. Users of the company's Object-

eral business applications that de-Store object-oriented database will get XML support by downloading free copies of Microsoft's Javabased XML parser and XML classes from the Object Design Web site.

> base will be able to represent XML data structures for specific business functions, such as sales and purchase orders. The parser enables the database to understand XML "data

tags," for access to documents and objects through a Web interface. This week, Object Design

will become the will announce developscripting lanment tools that make it easguage for XML. ier to design databases and build component interfaces based on Visual C++ and Java.

With the hope of moving XML forward, a summit of Perl and XML developers was recently held at O'Reilly & Associates to fuse the Web programming language and the new markup technology. The meeting featured Larry Wall, creator of Perl; Tim Bray, co-editor of XML: and Dick Hardt, developer of Perl for Win32. Summit attendees decided to try and make Perl the scripting language of choice for processing XML, which would make it even more accessible.

The group will first get Perl working with Unicode, which enables code to be easily translated into other languages. During the next few months, the group plans to release a Perl/XML specification in the third quarter and create an XML Web site.

NCompass Labs Inc., in Vancouver, is at http://www.ncompass labs.com. Chrystal Software Inc., in San Diego, is at http://www .chrystal.com. Object Design Inc., in Burlington, Mass., is at http:// www.odi.com.

Microsoft raises Java stink over Visual J++

By Bob Trott and Niall McKay MICROSOFT'S next-generation Visual J++ tool may still support cross-platform development, but it has stirred up vehement resistance from some developers because it is so heavily weighted toward the Windows platform. The extra weight is from the

Windows Foundation Classes (WFCs), client- and server-side Java class libraries that will replace the current client-side Application Foundation Classes "If I didn't know jack about Java

and grabbed VJ++ 6.0, in a minute I'd be doing Windows-based Java." said one Java developer who requested anonymity. Microsoft's ongoing legal fight

with Java inventor Sun Microsystems has highlighted the company's approach to the programming language, heightening developer interest in the upgrade to Visual J++. The upgrade - called Version

6.0 to sync with Microsoft's other development tools in the Visual Studio suite - includes a Visual Basic-like front end with ease-ofuse features, such as IntelliSense

code-completion, and includes tighter links to the Windows operating system. It is slated to enter beta testing in April and for general release this summer. Visual J++ 6.0 does not change

Java byte code, keywords, or pointers, but Microsoft did make changes to the language's event mechanism and conditional compilation when leveraging WFCs. It also does not support the Java Native Interface and signed JARs, making it an unacceptable mutation of Java, Microsoft's foes claimed. "It's almost a footnote or after-

thought - 'Oh yeah, it also will let you do that," said Dwight Davis, an analyst at Summit Strategies, in Kirkland, Wash., of the tool's crossplatform support Microsoft's detractors insisted

that the changes drastically alter Java, defined by Sun Microsystems as a "simple, object-oriented, network-savvy, interpreted, robust, secure, architecture neutral, portable, high-performance, multithreaded, dynamic language."

"Redmond will stop at nothing because they perceive Java as a threat to their stranglehold on the industry," wrote Rick Ross, president of the Java Lobby in New York, on the organization's Web site. "Fortunately for us, they are right. Java is a key technology for loosening that stranglehold." "They are not in favor of choice;

they want developers tied to Windows desktops," said a Sun official, The fruits of Microsoft's \$150 million investment in Apple Computer in Cupertino, Calif., last summer also have begun to pay off. The two companies announced last week plans to develop Microsoft's I/Direct - which lets lava developers write programs that call to the Windows APIs - for the MacOS. as well as a new Java virtual machine for the MacOS.

"Microsoft was in the background nodding its head while Apple was saying, 'Yeah, this is what we believe," said Ron Rappaport, an analyst at Zona Research, in Redwood City, Calif. "It shows what \$150 million will get you." Microsoft Corp., in Redmond,

Wash., can be reached at http:// www.microsoft.com.

For the record

On page 53 of the March 9 issue, the Hot Seat interview "Talking Net-Ware" incorrectly identified the position of Eric Schmidt. He is Novell's chairman and CEO.

In "Knowledge wares to energize intranets" on page 66 of the March 9 issue, pricing for the Atlas Server 2.0 was misidentified. It should read Atlas Server 2.0 pricing starts at \$12,500 for a 50-user installation, with volume discounts available. An optional "Web-kiosk" page named Global Atlas is priced at an additional \$25,000 per server

A slash was erroneously removed from a URL in Bob Metcalfe's March 2 column (page 123) on his Asia-Pacific tour. The correct URL for his Internet Futures talk is http://web.mit.edu/alum/www/Pres.





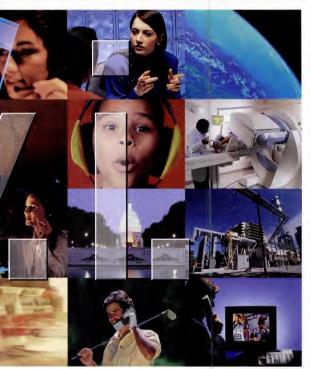
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InfoWorld February 2, 1998

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Windows to open on thin clients

Microsoft, Citrix betas capitalize on going the slim route

By Bob Trott

THE WINDOWS-ON-THIN-clients movement is picking up steam, with Microsoft and Citrix Systems both releasing beta versions of their thin-client server software

Beta 2 of Microsoft's Windows Terminal Server (WTS), formerly code-named Hydra, marks a significant upgrade from the first beta version, which was released last November, said John Frederiksen, Microsoft group product manager.

In addition to promised performance improvements through Microsoft's proprietary Remote Desktop Protocol, the second beta release of the Windows CE-based software will include application compatibility scripts that will let administrators avoid manual registry modification. It will also include a Client Connection manager to facilitate the launch of specific applications instead of an entire

Microsoft has not yet settled on a pricing scheme for WTS, according to Frederiksen

Originally viewed as a competitor to the network computer pushed by Java-centric Microsoft

foes, the Windows terminal has evolved into a product that satisfies a specific user requirement, according to one analyst. "Microsoft is now at the point of

being able to deliver the technology that may well ensure that the operating environment and applications it has nurtured into desktop

supremacy will adapt and continue to grow in the form of a spectrum of thin clients in an Internet world," stated a report from Zona Research, in Redwood City, Calif. IT managers looking for a termi-

nal solution will be attracted to WTS because of its Windows focus, Frederiksen predicted. They can hire high school students who know the Windows UI, college programmers who have experience with Windows, and

administrators who are bright enough to work with Windows," Frederiksen said. The next Citrix software, code-

name Picasso, aims to extend the Windows functionality of WTS to Unix, Java-based, and NC networks

via Citrix's own Independent Computing Architecture protocol.

Third-party vendors are also looking to capitalize on the next wave of thin-client devices.

Network Computing Devices stepped up with NCD ► Microsoft and ThinStar QuickStart Solu-Citrix plan to tion, which includes the release their Windows CE-based Thinrespective Win-Star Windows-based terdows Terminal minals and a consulting Server and services packages Boundless Technologies Picasso prod-

ucts by the end last week announced its of June. Viewpoint TC model 300, which also utilizes Windows CE to support Windows and terminal emulation sessions simul-

taneously. And Wyse Technology also released four new versions of its Winterm 2000 terminal. Also, Cruise Technologies has revealed that it is planning software that will extend support to wireless

client devices. Microsoft Corp., in Redmond, Wash., can be reached at http:// www.microsoft.com, Citrix Systems Inc., in Fort Lauderdale, Fla., can be reached at http://www Mobile databases

WinCE to get tiny databases

By Paul Krill

BOTH ORACLE and Sybase are going forward with plans for mobile databases running on Microsoft's Windows CE operating system for handheld computers, but Microsoft, at least for the time being, remains on the sidelines.

Oracle and Sybase have announced plans to port their Oracle Lite and Sybase Adaptive Server Anywhere databases to Windows CE. These products will provide a mechanism for mobile users with handheld or palmtop computers to re-synchronize data updates with enterprise databases

A beta version of Adaptive Server Anywhere for Windows CE is due by June, and Oracle goes to beta release in two weeks, with general delivery planned by September, according to company officials. Microsoft, however, is holding off

on porting its upcoming mobile version of SOL Server 7.0 - designed for traditional notebook users running Windows 9x - to Windows CF "We don't fundamentally believe

that people need a relational database management system on a CE device; the market is not ready for

it," said Doug Leland, Microsoft lead product manager for SQL Server, "When the market is ready, we will have a solution."

Although the 2MB to 4MB footprint of this desktop version of SOL Server is much larger than Oracle's planned 250KB to 750KB footprint for Oracle Lite on Windows CE, the size of the database is not the issue, Leland said, Still, he questioned whether Oracle would meet its footprint target, calling the goal "unlikely."

According to Leland, the dissimilarity between code bases for Oracle Lite and Oracle's enterprise databases would cause compatibility problems with applications. Oracle, however, stresses that users of Oracle Lite on Windows CE devices will have access to Oracle8 enterprise applications.

Microsoft Corp., in Redmond,

Wash., can be reached at (425) 882-8080 or http://www.microsoft .com. Oracle Corp., in Redwood Shores, Calif., can be reached at (650) 506-7000 or http://www oracle.com. Sybase Inc., in Emeryville, Calif., can be reached at (510) 922-3500 or http://www sybase.com

BETA REVIEW SAPPHIRE/WEB RELEASE 5. BETA 1

Early beta release of Sapphire/Web 5.0 includes promising features

By Maggie Biggs LUESTONE SOFTWARE'S Sap-

phire/Web 5.0 promises a strong set of development and deployment tools, as well as good integration with other products, and it could greatly sim-EST plify Web project cre-

ation from the client to the back end. I found that Sap-CENTER phire/Web 5.0, which

was announced today. adds quite a bit of functionality over its previous release. (See Info-World Electric at http://www.info world.com/printlinks.) Unfortunately, the version I tested, Sap-

phire/Web Release 5. Beta 1, did not yet contain all of the planned features, so I found it difficult to measure the success of the product update.

The product should appeal most to high-end sites. For example, the addition of Web application server support includes load balancing and state management

that will pit Sapphire/ Web 5.0 against rivals such as Netscape's Application Server Sapphire/Web 5.0 will

offer five modules: the integrated development environment (IDE), Web application serving, server-side component management, a development/deployment kit, and application integration tools.

The IDE contains much the same features as in previous versions. including integrated support for HTML, scripting,

and Java. Version-control options have been added, although they were not yet fully functional. I did like the enhance-

ments to the integrated Tag Editor, such as improved syntax color-coding and support for Dynamic HTML, Extensible Markup Language, scriptlets, and more.



developers to graphically work with data sources during creation of their Web applications.

> A number of wizards have also been added. In particular, the Java Builder offers integration with maior lava development tools, such as Symantec's Visual Café.

As in past versions, Sapphire/ Web is strong on tools that enable data accessibility and multitier application development, Enhancements to Java Database Connectivity and the inclusion of VisiBroker and Orbix Web add good value for I was disappointed to

find that Sapphire/Web does not include integrated debugging tools, although it does let you use external tools for troubleshooting error conditions. Developers would benefit from the inclusion of end-to-end debugging tools similar to those found in other competing products.

Despite minor bugs, I was able to deploy my test applications using the tools

Bluestone also expects to include pre-built integration tools for Java-Beans, CORBA, and COM (Component Object Model), as well as

major enterprise applications. Although I was unable to fully test all of the updates expected in Sapphire/Web 5.0, my overall feeling thus far is rather positive.

THE BOTTOM LINE Sapphire/Web Release 5.

scalability, and integration.

Enterprises with complex Web application requirements will find that Sapphire/Web 5.0 has promise. Enhancements in this version include improved manageability,

- Pros: Version control: enhanced syntax color-coding and additional tag support: new wizards and improved data accessibility: modules for integration
- with other applications. Cons: Lacks integrated debugging tools; expected features not fully implemented in this beta release.
- Bluestone Software Inc., Mt. Laurel. N.J.: (609) 727-4600: http://www.blue
- = Price: Developer: \$1.500 per seat: Server: storts at \$8,500; Integration Modules: starts at \$5,000
 - Platforms: Development: Windows 95, Windows MT SumOS Sum Soloris AlY MP. UK, SGI, and others. Production: Any platform that supports a Java virtual machine.
- = Ship date: April

Maggie Biggs (maggie_biggs@info world com) is a senior analyst at the InfoWorld Test Center.

Digital_Nervous_System: intelligent evolution



What is a Digital_Nervous_System?

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The time has come when you can build pretty much any kind of technology system you want, to do anything your company needs to do. When that technology system lets everyone in your company harness and share information freely, we call it a Digital_Nervous_System.

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What's in a Digital Nervous System? Up-to-date PCs. Universal e-mail (encompassing overseas offices, clients and vendors), Common productivity software (word processors, spreadsheets, etc.). Business-specific applications (either off-the-shelf or custom-built). And integration with the Internet.

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Naturally, we believe our software provides the best foundation for a Digital_Nervous_System. We built Microsoft* Windows*, Office, BackOffice* and Visual Studio" from the ground up to work together in the same familiar way. To provide the greatest level of software integration possible.

They also work with an industry's worth of applications, so incorporating new software solutions is easier. Taking advantage of hardware advances is easier, too, integrating internet capabilities is easier. Managing all the pleces is easier. Managing change is easier.

With a foundation of integrated software, it's easier to build and adapt a Digital_Nervous_System over time that meets your company's unique needs. You dream it up. You tailor it. You make it work.



Netscape is in serious straits following events that dampened the enthusiasm of even its most ardent IT supporters. Those events include the following:

 Lavoffs, takeover rumors. an \$88 million dollar fourth quarter net loss, preparations by key executives to sell off stock, and dim prospects for net profits in

early 1998; An unpredictable new strategy of giving away browser source code for free (see Between the Lines. Feb. 2, page 108), and backpedaling from its June 1997 intentions to deliver by early 1998 Communicator 5.0, formerly code-named "Mercury":

Confused messages about the strategic roles of its Netscape Applications (formerly Kiva), Actra, and SuiteSpot servers lines, and the threat that Microsoft will corner the Internet/intranet server market with Windows NT 5.0: and Other shelved initiatives, includ-

ing a "Javagator" Java browser for NCs, and an all-lava version of

Communicator, an HTML Java-rendering engine code-named Gemini. Each of these factors has had

grim repercussions. Poor financials reduce stock prices, which makes Netscape's job of attracting talented staff more difficult. The financial uncertainty also makes IT managers' task of defending Netscape purchases harder.

Also, the specter of NT 5.0, which will include an HTTP engine, a

Confusing the client

Netscape will not be making money off of its browser ymore, but corporate users still want a stable Web desktop, Will Netscape provide one? It isn't likely, based on changes since June.

> THEN: In June 1997, Netscape announced "Mercury" (Communicator 5.0), which was due early in 1998. Features included a client-side object store, a universal inbox, replication, roaming support, and fax and voice mail integration.

> NOW: Last week officials declined to comment on Communicator 5.0 features, due date, or even level of resources devoted to it. Rather, they say Netscape will publish source code March 31. Then, unknown features of Communicator 5.0 will emerge from public entities, for delivery in an undetermined timeframe.

> Web development environment. caching, and enterprise directory services at no extra charge, makes some IT managers wonder why -if they can get all those things in the operating system - do they need to go to Netscape for them?

Issues such as these are behind the fact that 52 percent of IT decision-makers surveyed at 120 companies said that they would not even consider Netscape as a strategic Internet/intranet server provider during the next year, said John Dunkle, president of Workgroup Strategic Services, the Portsmouth, N.H., consulting company that ran

That spells bad news for Netscape unless it can reverse the trend

or find a white knight. "Unless they get purchased by an IBM, Sun, or Oracle, they're history.

That's my gut feeling," said Craig Lowenthal, vice president of IT at Reliance National Insurance, a Netscape browser and server customer, in New York.

Lowenthal said if a rescuer doesn't materialize, he expects Netscape products to remain on the market, but, like WordPerfect, to become marginalized. Industry veterans attri-

bute Netscape's problems not only to Microsoft's attacks, but also to a false sense of security, and per-

haps hubris, that came from its triumphant 1995 stock offering and a reputation exaggerated by the digerati and its own executives. "[Netscape officials] caused more

damage through their arrogance and attitude and their challenging of Microsoft - how absurd," said Murray Maloney, technical director at Internet-commerce start-up CN Group, in Palo Alto, Calif.

Java developments

Sun to roll out Activator at JavaOne show

By Laura Kujubu and Michael Vizard

LONG- AND SHORT-TERM Java promises were the order of the day at Spring Internet World in Los Angeles last week.

Edward Zander, chief operating officer at Sun Microsystems, said that Sun will officially roll out its Activator technology for Microsoft's Internet Explorer browser at its JavaOne conference this month, and promised new technical and marketing support programs for independent software developers.

Originally previewed at Internet World Fall late last year, Activator is designed to allow users to download Sun's 100% Pure Java implementation of the Java Virtual Machine. Sun hopes users will adopt this version to prevent Microsoft from essentially highjacking control of the Java standard for Windows (see related article, page 3). Meanwhile, Sun hopes to quiet the long-standing ISV grumbling about Java support with several new initiatives.

Further out on the horizon are several promising implementations of new lava technologies, Last week Zander described a Java smart card that he said will serve as a universal device for accessing information ranging from a library card to an office desktop.

Zander also demonstrated various products, such as a digital answering machine that a user dials to retrieve voice mail, e-mail, and fax messages. The demo showed that an e-mail message can be digitized to allow a user to listen to it over the phone. In addition, a demonstration showed how users can download music from a Web site and burn it onto a CD themselves.

In general, IT managers at the show said they continue to be impressed about the potential of Java. "Instead of having to continually

buy upgrades, with everything residing in one place, with one piece of central software to maintain, this will really improve administration," said Maria Menendez, an IS manager at Alamo Rent A Car, in Fort Lauderdale, Fla.

"I was pretty impressed," said Bill Roth, an application manager at the Department of Transportation, in Topeka, Kan, "I'm looking at this technology trying to figure out how to use it - what to wait for and what to put in now. As far as remote computing, it now seems to make more sense to wait for the technology rather than to force-fit it now." Sun Microsystems Inc., in Moun-

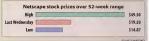
tain View, Calif., can be reached at

http://www.sun.com.

Justice Department's investigation

Sliding stock

Netscape's per share stock price, which is Indicative of its health, has been in decline since it peaked during the heady days of January 1996.



Others say Netscape grew so fast it didn't have time to build a service succeed, Paul added. infrastructure needed to support its shift from browsers to enterprise

server software, begun more than one year ago (see "Can Netscape Get the Message?" Feb. 10, 1997, page 1). So far, Netscape's response has been defensive. In February, the company changed its fiscal year and

will not report earn. ings until the third "A lot is going to week of May, rather depend on how than in April. Two weeks ago, company well [Netscape] officials privately suspended plans for does in the next six the June developers' conference as they

to 12 months." strategized, And last week, Netscape released free browser - Roger Walters. source code and re-Booz, Allen & Hamilton versed plans to ship

Communicator 5.0 beta products. (See chart, left.)

The company hopes that the free source code will spur a war of freeware developers against the army of Microsoft developers. It's a war that does not have an obvious revenue stream, however, And before bestowing source code, Netscape must remove the previously licensed third-party technologies that add value to Communicator. In the meantime, some users fear that the freeware approach will result in a splintered browser.

In Netscape's defense, John Paul, senior vice president of Netscape's server product division, said that Microsoft doesn't have the same operating system monopoly on servers that it does on desktops, so it can't muscle into the market as easily. Also, Netcape offers unique products such as the Actra Internet-commerce and Kiva application servers. And unlike NT 5.0, Netscape's directory, commerce, and application servers are available now and operate on Unix and

Windows NT 5.0 support. "I think it will be a very successful enterprise software company in two years. ... It's a \$20 billion market for building products into, and we're a very well-known brand," Paul said.

NT 4.x in addition to planned

Although Netscape is aiding the

of Microsoft, the company is not counting on government help to

But Netscape's server strategy may be ahead of IT buyers' plans. The Cutter Consortium, in Arlington, Mass., found in a recent survey that 45 percent of companies have not explored the cost/benefits of Internet platforms. Before Netscape can make hay in the

enterprise and ISP Internet/intranet server market, it must deliver favorable quarterly numbers; partner with a popular OEM. such as Compaq: improve its sales. service, and support

infrastructure; and clearly spell out which of its numerous server products are truly strategic, according to users and analysts.

Currently, Netscape's confused server marketing causes many IT managers to use Netscape Enterprise Server as an HTTP engine and let the other elements of the technically strong SuiteSpot family gather dust, noted David Leveen, a principle at Cognitive Communications, an intranet company in New York.

"That removes any advantage of integration between Netscape's clients and servers," Leveen said. Yet despite Netscape's problems,

and the company's Herculean task of articulating and executing a new game plan, most experts aren't yet writing its obituary.

"The revenue picture is pretty weak at this time, but I don't draw the conclusion that they're terminal," said Mary McCaffrey, an analyst at BT Alex Brown, in New York.

Among Netscape's strengths are a talented staff, its solid technology, and a decent corporate customer base. Also, the company is making easy money off of its Web site, which earned \$93 million in 1997.

Ironically, the company that pioneered Internet standards is now having trouble capitalizing on it. Netscape may never regain its former luster, but by acting quickly, it may yet salvage a role as a strategic IT partner. But the clock is ticking loudly.

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Sony and Hitachi help ease notebook burden

SONY WILL BRING ITS ultra-thin-and-light sources close to Sony say a U.S. launch is slat-Vaio notebook to the United States this summer with a slick design and sub-\$2,000 price. Measuring less than one inch high and weighing less than three pounds, the PCG-505 is currently available only in Japan, but

ed for July.

The system will feature a 200-MHz Pentium MMX processor, 32MB of RAM, a 10.4inch SVGA thin-film transistor (TFT) display, and a hard drive with more than 1GB for

a price of \$1,995, sources said. It will also include a 33.6Kbps modem, a 128-bit graphics accelerator, a Universal Serial Bus port, and a maximum of six hours of battery life. To address durability issues, Sony has fitted

Expo

the PCG-505 with a magnesium chassis.

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THE VAIO PCG-505 is set to ship in the United States in July.



In other notebook news, Hitachi has cut prices of its VisionBook line by as much as 20 The VisionBook Pro 7590, with a 266-MHz

Pentium MMX processor, a 4GB hard drive, and a 13.3-inch TFT display, was reduced in price from \$4,799 to \$4,199. On the low end the VisionBook Traveler

with a 133-MHz Pentium processor, a 1GB hard drive, and an 8.4-inch TFT display, was reduced in price from \$2,499 to \$1,999.

Sony Electronics Inc., in Tokyo, can be reached at http://www.sony.com. Hitachi PC Corp., in Milpitas, Calif., can be reached at http://www.hitachi.com.

— Dan Briody and Ephraim Schwartz



By Ed Scannell

TRYING TO POLISH his company's image as a leading-edge technology provider, Apple's interim CEO Steve Jobs at the Seybold seminar in New York this week will show off a Macintosh that uses a prototype of IBM's 400-MHz copper PowerPC chip, sources said.

But although Apple officials declined to say when the company will make such a system available, IBM appears to have its own road map laid out; officials said the company plans to deliver the chip in an RS/6000 server either late this year or early in 1999, and then in workstations later in 1999.

The chip used in the Mac demonstration is being supplied by the IBM Microelectronics division. Motorola is also working on a similar implementation of the PowerPC chip but has yet to deliver its first silicon.

Also this week, both IBM and Motorola will announce shipment of a 300-MHz version of their PowerPC 750 for Macintoshes. (See page 30.)

The new chip's technical capabilities appear to have already won a loval following among technical value-added resellers.

"The PowerPC 750's L2 cache has enabled Interware to develop high-speed cards with

excellent cost performance," said Toshio Nakasima, president of Interware, in Tokyo, The company's Booster G3 300 is scheduled to ship by the end of the second quarter. The 300-MHz PowerPC 750 operates at a

power dissipation range of 4 to 7 watts, and has a 2.5-volt core, 3.3-volt I/O, and a 32KB data cache. Both IBM and Motorola are pricing their

versions of the chip at \$495 in quantities of 1,000, according to company representatives. IBM, in Armonk, N.Y., is at (800) 426-3333. Motorola Inc., in Schaumburg, Ill., is at http://www.motorola.com.



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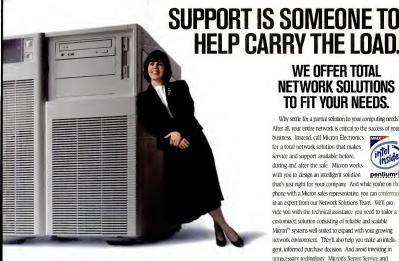








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Mohile PII

Mobile Pentium II, some find themselves unable to fulfill Intel's promises for the chip - particularly that it will proliferate among high- and low-end notebooks alike.

"We would love to make an inexpensive system based on the Pentium II, but the fact is that the chip is still too expensive," said one vendor official who asked to remain

As a result, prices will vary widely upon the introduction of the systems. Compaq's plans include the Armada 7800, priced from \$4,000 to \$5,000 and featuring the 266-MHz version of the Mobile Pentium II. 64MB of synchronous DRAM. and a 5GB drive, sources said.

Dell intends to reach the sub-\$3,000 price point with its Inspiron line, which features systems with a 233-MHz Pentium II and a 13 3inch thin-film transistor display. It will include the 266-MHz Pentium II in its corporate Latitude line. which features a 13.3-inch display, a height of 1.7 inches, and a builtto-order configuration at prices less than \$4,000, sources said.

Intel attributes such price dispar-

ity to variations in marketing. "We will see systems similar to

what we've seen in the past, not the Everyman's affordable computer." said John Antone, worldwide prod-

uct marketing manager at Intel. "We also anticipate \$2,995 and below from a number of (vendors), as well as some thin-and-light machines. But in terms of chip pricing it is a level playing field.

As for various form factors, the thinnest product to take on the Mobile Pentium II is NEC's Versa 5000. at 1.3 inches, featuring a 233-MHz or 266-MHz chip and a built-toorder configuration At prices starting at about \$3,500.

Beyond that, form factors are not expected to change much IBM will include it in its ThinkPad 380, 600, and 770 lines and it aims to make the Mobile Pentium II systems affordable, at prices less than \$4,000.

Analysts said April 2 will not be unlike previous Intel chip announcements, with several expensive systems making their debut. The company's plan to aggressively cut prices on the Mobile Pentium Il with 300-MHz version should enliven the market this fall.

Other products expected to be announced on the Mobile Pentium Il launch date include a Tecra 700 from Toshiba and a very high-end OmniBook 7100 from HP that includes an 8GB hard drive at prices less than \$6,000

Intel Corp., in Santa Clara, Calif., can be reached at (800) 628-8686.

Ephraim Schwartz contributed to this article

Continued from page 1

Pricing pressure from Dell has reseller-dependent vendors scrambling to be more competitive and sweating over inventory they have not, and may never move

The good news? Dramatic price cuts are likely in store for IT buyers, Unsold Compag systems left on resellers' shelves after a round of server price cuts by Dell and IBM in January and February put Compag in a position to respond.

which will have repercussions. "Compag is warning everyone --they need to get these products moving. We expect a price war," said Amir Ahari, a senior research analyst at International Data Corp.

(IDC), in Framingham, Mass. Compag last week announced it would move quickly to reduce excess inventory and polish its buildto-order and channel assembly ini-

"We are putting in place price reductions and aggressive promotions in the first and second quarter to reduce these channel inventories and accelerate our Optimized Distribution Model," said Compaq President and CEO Eckhard Pfeiffer in a statement. Specific pricing details were not released.

Will Compag's piece of the nie shrink?

Following inventory problems in late 1997. Compaa may risk losing market share to more nimble competitors such as Dell

Worldwide Intel-based server shipments in 1997



turmoil closely, and executives promise that it will not be caught flat-footed. HP expects to cut prices across its entire Intel server line as early as this week, one executive said, and the company will work to reduce its inventory in the channel from four weeks to two weeks by vear's end

"If this escalates into a price war, we will be competitive," HP Chairman and CEO Lew Platt told an audience at Internet World in Los Angeles last week. For its part, IBM will deliver a

new \$4,000 to \$6,000 Netfinity server this fall as part of "a full-court press on Compaq," said one source familiar with IBM's product strategy. But IBM is rumored to also have stuffed its channel with excess servers at the end of last year, and may be forced to pay dearly for that as soon as the second quarter. Compag's feisty neighbor in Aus-

tin, Texas, build-to-order specialist Dell, may be the one to draw the pricing combat lines, observers hies

"For Dell, [price cuts are] just execution," said IDC's Ahari, "It's hard to beat them at execution."

In addition to the direct model benefits of nonexistent inventories and "just-in-time" delivery of computer components, the senior vice president of Dell's server group. Mike Lambert, said the model can turn an indirect seller's loss into a direct company's gain. Manufacturers of processors,

drives, and memory often reduce prices on their own excess inventories. Direct vendors with no inventory can take immediate advantage of these price cuts to pass on lower system prices to their customers, Lambert said. Such price reductions are coming soon, he added. Compaq Computer Corp., in

Houston, can be reached at (281) 370-0670

Ephraim Schwartz contributed to this article.

Intel all over the map

The Pentium Mobile chip is the first in a long line of initiatives Intel is planning this year. Chip set Use April 2 AAORY 233 MHz. 266 MHz April 15 ANDEY Basic PCs April 15 Pentium II Slot 1 AAORY Desktops One processor, 100-MHz bus, ATX or NLX form factor April 15 Pentium II Slot 1 440R) Two processors June/July Pentium II-SVW Slot 2 450NX One to four processors Pentium II-SVW Slot 2 440GX Workstations One to two processors Second half Pentium MMX Mobile 430TX Mini-200 MHz, 233 MHz. low voltage Fourth quarter Pentium II-SVW Slot 2 Profusion Servers One to eight processors First half, 1999 Pentium II Slot 1 AAORY Desktops 1394 FireWire support Integrated First half, 1999 Pentium II Mobile 100-MHz bas 4408X Notebooks Second quarter, Katmai Desktons. wardstations

Servers

Nagano Continued from page 1

Second half Merced

Seattle, "It is a problem that's prob-

ably true for any organization that has lots of servers: How to find load balancing? You want to make the best use of the resources that you have. We just haven't had a chance to take a hard look at it." Nagano places a load-balancing

server between Web-based clients and any number of Web servers, Algorithms meter out the requests for pages and objects to the server best able to handle the chore, which then sends the page to the requesting client. Behind those Web servers can be any number of Nagano caching proxy servers, which may be placed geographically so they are close to those groups of end-users demanding server access.

This not only speeds up page serving but also maximizes existing bandwidth and can cut the cost of using transcontinental networks for simple page requests. "An administrator can also customize how to keep information in

the cache based on the I platform Internet content selection | standard. which allows a browser to mitigate pages and access URLs," Mathis said. The last major element of Nagano

64-bit Intel architecture

adds a grouping of file servers that link and integrate the overall Web infrastructure to existing core IT systems, Mathis said. The beta version of Nagano will

arrive this month on AIX and Sun Solaris, with a Windows NT version expected later in the year. Final yersions of the Unix-based systems are expected before year's end. Analysts and users were enthusi-

astic about Nagano's possibilities. "This is a step in getting to carrier-class Internet services on the ISP and hosting side," said David Cooperstein, an analyst at Forrester Research, in Cambridge, Mass,

Rick Chatoian, a sales engineer at Whole Earth Networks, a service provider in San Francisco, said Nagano sounds interesting and believes it will fill a niche, especially as customers get into more multiple server applications. IBM, in Armonk, N.Y., can be reached at http://www.ibm.com.

Continued from page 1

The duplicating companies, for

their part, agreed not to post the utilities on the Web. The joint announcement, planned

for this week, was over-ridden by Microsoft's antipiracy and legal departments, sources familiar with the original plans said. Instead, the Redmond, Wash-

based giant will offer the cloning utilities for Windows 98 and NT 4.0 only to its Select customers who will invoke it when using a solution from one of the cloning companies.

Though Microsoft denies even the existence of these utilities, a number of the companies that make duplicating products said the Microsoft decision will prevent them from offering it to large corporate customers who are not in Microsoft's Select program.

Nevertheless, Microsoft insists it has struck the right balance. "When we started to understand

that our corporate customers wanted this capability [cloning the OS],

we started to think [about] how we would do things differently for Windows 98," said Clark Heindl, product manager for Windows 98 and NT at Microsoft. But he said it will not support NT 4.0 cloning. For IS managers, the lack of Mi-

crosoft support has been a source of frustration. "Without their input we would

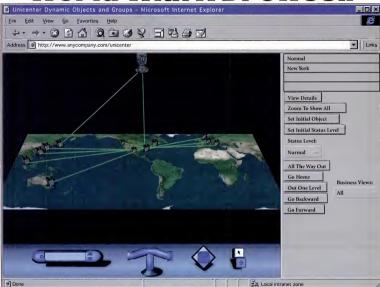
not use a third party solution," said one IS manager at a national cor-In May, Microsoft will include the

utilities for NT 4.0 and Windows 98, code-name SysClone, on its Select CD-ROM disk. Cloning manufacturers are upset.

"It's a shame that Microsoft doesn't support these duplication methods for everybody, because by using a product like our Image-Masster they could set up hundreds of system per day with their operating system, whereas without it you could only do 10 or 20," said Terence Fugazzi, vice president product development for ICS. ICS Inc., in Chatsworth, Calif., is

at http://www.ics-ig.com, Microsoft Corp., in Redmond, Wash., is at http://www.microsoft.com.

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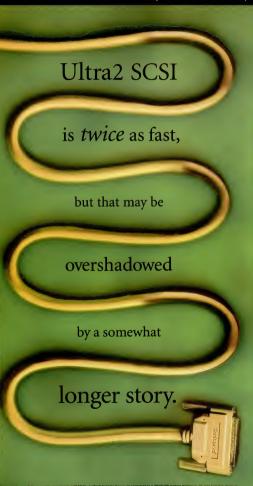


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BEST SOFTWARE introduced a human resources and payroll-management suite based on Microsoft's BackOffice. The suite, called Best Imperativ HRM5, uses Microsoft's Internet Explorer Web browser as a front end. It allows employees to look at and update personal information in their files, Modules include Human Resources. Payroll, Recruiting, Training, and Employee Self-Service.Imperativ HRM5 will be available in the second quarter. Prices start at \$50,000, Best 5oftware: (800) 424-9392.

NEW DIMENSION SOFT-WARE announced its Control-M Option module that integrates New Dimension's production control and scheduling software with 5AP's R/3, and has been certified compatible by 5AP.Control-M lets users automate and manage the setup, scheduling, and running of processes that extend across SAP R/3, such as financial analysis and human resources The SAP Control-Minterface will be available later this month, priced starting at \$34,600, New Dimension Software: (800) 347-4694.

SHIPPED

DIGITAL brushed up against the sub-\$1,000 server market with the release of its new Digital Server 500, a uniprocessor server for small husinesses departments, and remote offices. Pricing for the server will start at \$1,100 for a 233-MHz model with 32MB of RAM. The 500 model has two PCI and three ISA slots, and can be configured with as much as 25.6GB of internal storage and 256MB of RAM. The company also announced the Digital Server 3205, a 300-MHz Pentium-II version of the currently available, dual-processor 3200 model. Both computers will be available prepackaged with Microsoft 5mall Business 5erver software and Digital's 5erverWorks. Digital Equipment Corp.: (800) 344-4825.

TALK BACK

To contact Client/Server section writers, send e-mail to firstname lastname@ infoworld.com,

CLIENT/SERVER

Data warehouses have need for clean data

By Paul Krill

NO MATTER HOW well you tune your data warehouse, reliability of data is tantamount to any successful project. And even simple discrepancies can cause serious repercussions when attempting to make well-founded business decisions based on the

warehouse data. Unreliable data has resulted in such blunders

as listing a doctor's patient as male and pregnant, industry observers say.

'If you have poor data quality and you put that data into the warehouse, vou may end-up making poor business decisions, so the risks are very high," said Robert Craig, an analyst at the Hurwitz Group, in Newton, Mass.

A 1997 survey by the Data Warehousing Institute of 320 people found data ouality to be a paramount issue. ► For tips on

improving

data mart

performance,

see page 77.

THE BUG REPORT

system. Look for the file W9S700B.EXE at ftp://ftp.artisoft.com.

from any server before installing the newer product.

HPFS format, or install it on another HPFS formatted drive.

Buas and fires reported to Buallet

Artisoft LANtastic Patch B has been released for Version 7.0 with a

fix to a FAT32 problem that LANtastic had in earlier versions, where a LANtastic DOS

client couldn't see all the subdirectories on a LANtastic 7.0 for Windows 9S FAT32 file

Intel's LANDesk Management LANDesk Management Suite 6

cannot be installed on a computer that is running Microsoft Routing and Remote

Access Service, Also, do not install the LANDesk Management Suite 6 core and con-

sole over Intel LANDesk Workgroup Manager 1.1b. Uninstall the Workgroup Manager

Lotus Domino If you are installing Lotus Domino Go Web server onto

an OS/2 machine, Lotus says not to install it on a FAT formatted drive. If you do. you

will get the error message: "EPFIE 112." You either have to format this drive to an

"This is the year [transformation tools vendors have got to prove themselves," said the institute's vice president Richard Rist, in Gaithersburg, Md.

Finding the right tool is not the only issue in ascertaining data quality. Stringent data collection and entry processes, and the collection of meta data, or information about the origin of data in a warehouse, also matter, said users and ISVs.

At one warehouse, NDC/Health Information Services in Phoenix

more than 30 people are involved in ensuring data quality.

"Our core business is data, so there's a large investment in making sure the information is accurate," said Alan I. Hirshman, senior prodnet director at NDC

> NDC's warehouse, built on Microstrategy's DSS Web technology, features data checking. Without data accura-

cy, "our clients lose confidence in the basic quality of our product," Hirshman said. IT personnel, for example, would flag an item such as a data piece indicating a doctor wrote 3,000 prescriptions per month, an unrealistic number. NDC uses statistical analysis software from SAS Institute to catch statistical anomalies. To move mainframe-based data into a warehouse based on a relational data-

base, the company wrote its own Cobol programs. Other steps to ensure referential integrity in the

warehouse involve making sure codes used in mainframe programs are converted to something users can understand. For instance, the program may use the number 1 as a code for invoice, which has to be converted

to the word "invoice" for users Another issue is maintaining updated data. An independent consultant who helped implement a

warehouse at a large telecommunications company cited an example

in which a customer's history would disappear when a phone number changed.

"That means you have no continuous relationship with that customer," said Paula A. Thornton, in Colorado Springs, Colo.

What the marketplace needs, she said, is software that assembles corporate functions, such as name and address mapping, to avoid redundancies. "Everybody's been fo-

cusing on putting little pieces of code into libraries to reuse and they haven't focused on where the real money is to be made, and that is putting assemblies together," Thornton said. Differences in the use of

data for transactional vs. warehousing purposes must be rectified when developing a warehouse, one

Oracle official said. For example, an incorrect zip code for a customer may not mean much when processing a transaction, but could cause serious ramifications in warehousegenerated marketing, said Neil Mendelson, Oracle's director of data warehousing, in Redwood Shores, Calif. "In the transaction-processing

world, [a wrong zip code] doesn't translate to a big issue. Now, all of a sudden if you say, now I want to do something with that data and I want to do something by geography, now zip codes become important," Mendelson said.

Meta-data maintenance is also crucial.

"The meta data should provide

Cleaning products

Here are some data quality and transformation offerings currently on the market. Acta Technology's ActaLink for SAP - for migrating

SAP application data into data warehouses. Ardent Software's DataStage suite --- data extraction

Evolutionary Technologies' ETI Extract Tool Suite -

data-integration management Firstlogic's i.d.centric Match/Consolidation - batch processing and data-consolidation software

Oracle's Oracle Toolkit for SAP --- SAP application

Prism Solutions' Prism Warehouse Executive - data extraction and conditioning

Trillium Software's Trillium Software System — tool for cleansing and the re-engineering of data.

> the ability to make changes so that a company is able to leverage prior efforts and be able to keep up with business requirements, It's much more of an incremental approach than trying to recreate the wheel every time," said Paul Albright, senior vice president of worldwide marketing and channels at Informatica, in Menlo Park, Calif.

NCD to use Pentium chip in Windows-based Terminal

THE WINDOWS-BASED Terminal

picture got a little clearer last week, as Network Computing Devices (NCD) announced a new agreement with Intel to produce Pentium-based "lean clients."

In addition to the deal to produce hardware based on Intel's leanclient specification, Intel backed up its commitment to the thin-client marketplace by purchasing 750,000 shares of NCD's common stock, equivalent to 4.4 percent of the terminal vendor. Under the arrangement, NCD

plans to create a Windows CEbased device running a Pentium chip. According to the company, the device can be termed as a Windows-based Terminal (WBT), answering many questions about whether Intel intended to play in the WBT market.

"I think that this is a positive for the market in general," said Eileen O'Brien, an analyst at International Data Corp., in Framingham, Mass. "Now we have clarified that 'leanclient' is an architecture that could he a WBT or an NC, and in this case it is a WBT. This is Intel and Microsoft endorsing a terminal together; obviously they would not be entering this market if they didn't think it would be successful." Analysts said they wouldn't be

surprised to see more vendors announce similar arrangements with Intel later this year. NCD's products will be available

in the second half of the year, according to Lorraine Hariton, senior vice president of marketing and sales at NCD. Network Computing Devices

Inc., in Mountain View, Calif., is at http://www.ncd.com

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Voice technology finds a corporate raison d'etre

By Ephraim Schwartz

BY THIS FALL, voice technology will begin infiltrating the silent world of e-mail with three products designed to convert e-mail messages into speech and voice mail into text for access via the telephone, computer, and the Web.

At Comdex this fall in Las Vegas, Bay Area Science Center (BASC) headed by early speech technology pioneer Richard Grant - will introduce an application, code-name SkyMail, which will offer handsfree and eyes-free access to e-mail

Using a voice-identification feature for security, users will have their e-mail read to them, and will be able to create e-mail messages via text-to-speech technology, Grant said. Other features will be complete control of e-mail, including access to address books using natural language recognition technology. Sky-Mail Pro, a client/server version, will also be announced.

At Spring Comdex this April in Chicago, BASC plans to introduce VoiceSecure, a screen saver that prevents access to a system until it recognizes the user's voice.

Grant sees voice technology as the 21st century's user interface.

"The base technology will go from a mechanical interface to a human-centered interface whose primary I/O is speech," said Grant, who is also the chief technical officer at BASC.

Access to messages anywhere, anytime - dubbed "unified messaging" by Conversational Computing - is the target of the company's Conversa Messenger that

will ship in May. Like SkyMail, Conversa Messenger will let users talk to their computer as if it were an assistant, send-

ing and receiving e-mail as well as converting spoken messages into digital .WAV files for distribution via e-mail. A client/server version of the package will be available in the third quarter, Conversa Messenger will sell at a price of \$99.95 for a downloaded version via the Web or \$129.95 for a CD-ROM.

As speech recognition moves into the corporate environment. one analyst said support issues are becoming more critical.

"With speech it may be hard for a typical IS group to know why a package isn't working. It can potentially raise the total cost of computing until the support staff is up to speed on what's involved with speech recognition," said Jackie

Fenn, vice president and research director of Advanced Technology at Gartner Group, in Burlington, Vt. Meanwhile, General Magic plans

to ship its unified messaging product, Serengeti, late in the second quarter, according to officials. Serengeti will allow subscribers to have access to e-mail and voice mail via the telephone or from Webbased clients. The program will read e-mail aloud, convert voice mail to e-mail, and forward messages as faxes using a natural language recognition system.

To support this program, the company last week unveiled its Network Operations Center with more than 100 Windows NT-based

Bay Area Science Center, in Santa Cruz, Calif., is at http://members .xoom.com/bayareascicty. Conversational Computing Corp., in Redmond, Wash., is at http://www .conversa.com. General Magic Inc., in Sunnyvale, Calif., is at http:// www.genmagic.com.

CLIENT/SERVER

Toshiba expands build-to-order

By Dan Briody and Rob Guth WITH JUST A YEAR'S WORTH OF experience in the U.S. commercial desktop market. Toshiba is already planning a new line of corporate PCs, as well as an expansion of its

build-to-order distribution model. Toshiba's Equium 7000 series is the result of customer feedback on the 5000 and 6000 series, announced in 1997, said Elizabeth Marks, senior product manager. The systems are based on Intel's NLX specification, which is designed to allow quick access to key internal components, and include new software called Expert Intelligent Help for frequently

asked questions about the system. The Equium 7000 series, available now, includes 233-MHz, 266-MHz, 300-MHz, and 333-MHz Pentium II processors, as much as 256MB of synchronous DRAM, and an integrated ATI 3-D Rage Pro graphics card, officials said.

With the 7000 series, Toshiba brings its desktop manufacturing back into the United States and implements a build-to-order distribution model, officials said.

Toshiba will begin its U.S. buildto-order scheme next month with



EQUIUM 7000 is its desktop line, priced starting and later this year will expand at \$1,229. sales to include

its full range of notebooks, officials said. Also by the second half of the year. Toshiha will offer its high-end Tecra notebooks on a configure-toorder basis officials said.

Toshiba's build-to-order plan calls for dealers to maintain a min-

imal inventory of popular machines in stock, and if customers demand machines that are not on hand, the dealer can order the specific configurations from Toshiba's factory in Irvine, Calif.

When the company begins configure-to-order sales of Tecra notebooks, users will be able to specify more choices of components such as processor and hard drive, according to Fumio Ya-

mashita, Toshiba's senior manager of its international PC division. Toshiba officials said they can deliver machines to dealers in less than five days, slashing time to market for PCs and reducing inventory levels at Toshiba factories.

Toshiba America Information Systems Inc., Irvine, Calif., can be reached at (714) 583-3000.

Rob Guth is a Tokyo correspondent for the IDG News Service, an Info-. World affiliate.

Newer plots upgrade to 300-MHz chip

IBM IS EXPECTED to introduce a 300-MHz PowerPC chip this week, according to Newer Technology, whose product announcement coincides with IBM's launch

Apple Computer would not say whether it will use the 300-MHz chip in its Macintosh line, adding that the company does not comment on future product plans.

Newer, however, plans to introduce upgrade cards using the 300-MHz chip that will work with desktop systems from Apple, as well as from Macintosh clone makers Umax and Power Computing. Newer will also introduce PowerPC G3 processor upgrades for the Apple PowerBook 1400 product line, according to company officials.

The 300-MHz upgrade cards. priced at \$1,999 and \$1,799, both feature a 1MB backside cache and have either a 300-MHz or 150-MHz bus speed. The cards are compatible with the Apple PowerMac 7300, 7500, 7600, 8500, 8600, 9500, and 9600 lines; the Umax 1700 and S900 lines; and Power Computing's PowerTower Pro, PowerWave, and PowerCurve lines. Newer's 300-MHz upgrade cards are now shipping.

The PowerBook cards are available in two models: a \$700 card with a 216-MHz processor, 512KB backside cache, and a 108-MHz bus speed, or a \$1,000 card with a 250-MHz processor, 1MB backside cache, and 125-MHz bus speed.

Also, Newer has delayed the re lease of G3 upgrade cards for older PowerMacs as it found many users are still using the MacOS that shipped with those systems, and more testing had to be done. They expect to ship those cards later this

month, company officials said

Newer Technology Inc., in Wichita, Kan., can be reached at http://www.newertech.com.

STREETPRICES Pentium desktops FOR THE WEEK OF MARCH 16

166-MHz Pentium MMX system ¹	Hard drive	Low	High	Average	Change from February
AST Bravo MS 5166	2.0GB	\$1,442	\$1,939	\$1,684	-4%
Compaq Deskpro 4000	3.2GB	\$1,458	\$1,716	\$1,555	-7%
Dell OptiPlex Gn 5166	4.3GB	Direct price		\$1,312	-2%
Digital PCS100	2.1GB	\$1,293	\$1,532	\$1,381	-12%
Gateway 2000 E-1000 166	4.0GB	Direct price		\$1,184	-5%
HP Vectra VLS	2.5GB	\$1,318	\$1,625	\$1,444	-9%
IBM PC 300GL	2.5GB	\$1,290	\$1,510	\$1,368	-5%
Micron Millennia MME 166	3.2GB	Direct price		\$1,528	-496
Clones/compatibles ²	4.0GB	\$ 891	\$1,379	\$1,112	-4%
PowerPC system'					
Apple Power Macintosh G3 Deskto	p 4.0GB	\$1,579	\$1,799	\$1,660	-11%

Apple Power Macintosh G3 Desktop 4.0GB			\$1,579	\$1,799	\$1,660	-11%
THE LINE Products		Next pricing	Products		Last priced	Next pricing
Flatbed scanners Dec. 22 March 23 Multifunction printers		on printers	March 9	Jace 1		
Hard drives	March 2	May 25	Pentium desktops		This week	April 20
Into-jet printers	Feb. 23	May 11	Pentrum notebooks		Feb.9	April 13
Laser printers	Jan. 12	April 6	RAM		Feb.2	May 4
17-inch monitors	Jan. 5	March 30	Servers		Jan. 26	April 27

was conected network march 1 and watch 7.

The nature systems include Windows, a Neyboard, a mouse, 32MB of RAM, and a 15-inch col-or monitor. The AST Compaq. Gateway, and Micron systems include a CD-ROM drive.

2. Clones and compatibles are systems with the same features as those listed.

by name, but they are not as widely available.

3. The Apple system includes a 213-MHz PowerPC G3 processor, 32MB of RAM, System 8.0, a mouse, a key-board, and a CD-ROM drive, but it does not include a monitor.

No medals.

No anthems.

No team jackets.

Just 645 million hits to the Nagano Games Official Web site.

Okay, so the IBM RS/6000 Web server did have a few fans.



IBM's award-winning' UNIX* server, the RS/6000; flawlessly powered the Nagano Games Official Web site. And even set a record of its own: handling 103,429 hits in a single minute. Recently named product of the year by Info World; the RS/6000 has the speed, power and endurance that can help your business compete. Prices start at just \$5,900; so come visit us at

www.ibm.com/rs6000/nagano



Reporting software

Lawson tool customizes reports for executives

The right report

director-level positions.

By Stannie Holt

LAWSON SOFTWARE, a midsize vendor in the enterprise resource planning (ERP) market, unveiled a new packaged data-warehouse

component last week that is designed to deliver customized reports to different executives within a

company Called Insight P.I., the tool extracts as many as 200 performance indicators from Lawson's Insight suite of ERP software, including manufacturing,

human resources, supply chain, and financial programs, and compiles them into reports, saving users the

trouble of setting up queries. automatically via a Web browser.

The first three of approximately 30 role-based Insight P.I. desktops, due out in June, will be designed for use by a company's chief executive officer, chief financial officer, and chief operating officer.

Other roles to follow this year will include sales executive, human resources chief, warehouse manager, inventory buyer, and other director-level positions, according to company officials.

A toolkit will let users add or

rate communications at Lawson. Insight P.I. is priced at 20 percent The tool then delivers the reports

of the total Insight license fee, which varies based on configuration and the different packaging options, including financials management process, human resources process, procurement process, and supplychain process suites. Lawson estimates that an average Insight P.I. sale will cost about \$100,000.

ing and health care, said ludith

Rothrock, vice president of corpo-

change the indicators each report

medium to large implementations,

especially in its core areas of retail-

Lawson Software's Insight P.I. leverages Lawson's

Insight ERP suite to generate customized reports

for an organization's chief executive officer, chief

Later this year Insight PJ, will gain report generation

targeted at sales executives, human resources officers,

warehouse managers, inventory buyers, and other

financial officer, and chief operating officer.

Lawson is aiming Insight P.I. at

The software is available on many Unix iterations, IBM's OS/400, and also on Windows NT

Lawson Software, in Minneapolis, can be reached at (612) 379-2633 or http://www.lawson.com.

Intel may offer interim chip before Merced

By Andy Santoni

AIMING TO EASE THE transition from 32-bit to 64-bit CPUs, Intel next year plans to introduce an IA-32 processor that will fit into the same slot as the IA-64 Merced, according to one industry analyst and

other sources. The processor, which currently has the code-name Tanner, "is designed to bridge the gap between the company's high-end x86 products and Merced," said Linley Gwennap, the publisher and editor in chief of Microprocessor Report, in Sunnyvale, Calif.

This new processor "is said to incorporate an x86 processor core, probably [Intel's] Katmai, along with an interface to the so-called Slot M interface that will be used by Merced," Gwennap explained.

The processor would let users buy IA-32 systems that are "Merced ready," and upgradeable if the user's needs change, Gwennap said.

However, according to one executive with a hardware OEM who asked not to be named, Intel would only rely on such an interim chip if its 1999 target delivery date for Merced slips.

"It's a contingency plan," the executive said

Gwennap expects Tanner to offer better performance than systems using Slot 2, which is the IA-32 interface for multiprocessor systems.

Gwennap also expects Slot 2 to double in speed to 200 MHz next year, but that would only result in a

peak bandwidth of 1.6GBps. "While this performance is likely to satisfy the needs of most systems in that time frame, high-end workstations and multiprocessor servers can make good use of the greater bandwidth of Slot M,"

Gwennap said. Intel does not comment on unannounced products.

Intel Corp., in Santa Clara, Calif.. can be reached at (800) 628-8686 or http://www.intel.com

Cara Cunningham contributed to this report.

SCO touts UnixWare 7 as enterprise-ready

By David Pendery

SCO LAST WEEK formally released UnixWare Version 7, which the company said is ready for the enterprise and only a step away from optimization for the 64-bit Merced chip. UnixWare 7 features clustering

capabilities to four nodes, with six nodes planned by the end of the year, and can work with Hot Plug PCI. Non-Uniform Memory Architecture, and Intelligent I/O technologies. It includes the Java Development Kit 1.1.3 and Very Large Memory support.

Optional, browser-based elements that enable this include Netscape's Enterprise Server, Proxy Server, LiveWire, and Messaging Server, and SCO's Tarantella application broker interface.

Some observers said SCO is leveraging the strengths of its partners to propel the company and its flagship product into the public eye, while simultaneously clearing other players from the field.

"SCO has no mindshare to speak of," said Dan Kusnetsky, an analyst

at International Data Corp., in Framingham, Mass. "So they are trying to take advantage of their partners, to build a major presence." At least one partner, Compaq, is

conveying SCO's message. "Only pretenders remain [in the Unix field!" said Mike Perez, Com-

paq vice president and manager of server lines. UnixWare 7, which is now available, is priced at \$795 for the base

SCO Inc., in Santa Cruz, Calif.,

can be reached at (800) 726-8649.

WINDOW MANAGER · BRIAN LIVINGSTON

A little 32-bit mail file can have a big effect on your PC — but here's a fix

OMETIMES THE SIMPLEST things lead to big troubles, Reader Michael Gove of El Segundo, Calif., writes that he recently updated his version of Microsoft Internet Explorer and Outlook Express - fair enough. But it soon became clear that his address book and mail merge features in Microsoft Word 7.0 no longer worked. Fortunately for Gove, an error message

pointed him to a solution. He found that the shared file MAPI32.DLL (Microsoft's 32-bit mail API) appeared both in the error message and in his Windows\System folder with a new date corresponding to his Explorer upgrade. Replacing the new version with the original file from a backup solved the problem. But this little file has a much bigger impact than just a simple error message on a single

user. Microsoft reports that installing its Exchange Update - which is part of Windows 95's Service Release 1 - can give you a version of MAPI32.DLL that conflicts with other

The Exchange Update is a fix that a number of new Windows 95 users found themselves very interested in when they migrated from Windows 3.1x. As shipped in the Windows 95 box, Exchange cannot view the shared folders in the post offices created by Windows for Workgroups 3.x and Microsoft Mail 3.x.

Microsoft provides the Exchange Update to correct this. You download the update by pointing your browser to http://support .microsoft.com/download/support/mslfile s/exupdusa.exe. Running the update writes to your hard disk new files that update Exchange

The problem arises if you run the file from your Windows folder or your Desktop. These seem like two reasonable places to put a new Windows file. But if you do so, according to conflict." (For more details, see http://sup port.microsoft.com/support/kb/articles/q1 41/1/27.asp and http://support.microsoft .com/support/kb/articles/g152/7/90.asp.) Instead of using the Windows folder or your Desktop to run this file, you should create a temporary scratch folder and run it from there. If you already ran EXUPDUSA.EXE on the Desktop, delete the following eight

Microsoft, this results in "creating the version

files from there now: MAPI32.DLL, MAPI,DLL, MSFS32,DLL, EXCHG UPG.INF, EXCHNG32.EXE, READ ME.TXT, WGPOADMN.DLL, and WMSUI32.DLL Symptoms of the problem include

the Tools menu and the Deliver Now command being disabled in Microsoft Exchange, or Windows crashing entirely.

Microsoft also says that MAPI32.DLL is involved in a snafu in which some PC manufacturers installed the retail version of Windows 95 but enclosed Windows Service Release 1 on the CD-ROM that shipped with the systems (or vice versa).

When users run the Add/Remove Programs control panel to add a component, they receive an error message about "older files" being copied to their system - including MAPI32.DLL. Microsoft recommends that you contact the vendor. See http://sup port.microsoft.com/support/kb/articles/q1 If you're having MAPI32.DLL problems but

don't have a backup like reader Gove, first copy the EXTRACT.EXE file from your Windows 95 disk to your C:\Windows folder. Then use the following command at a DOS prompt (all on one line), where X: is the drive in which the Windows CD-ROM or setup diskette is located, to restore your original MAPI32.DLL:

EXTRACT /A X:\WIN95_02.CAB MAPI32.DLL /L C:\WINDOWS\SYSTEM

Gove will receive a copy of Windows 95 Secrets for reporting to me his problems and the fix.

Brian Livingston is the co-author of several best-selling Windows books, including the most recent Windows 95 Secrets (IDG Books). Send tips to brian livingston@ infoworld.com. He regrets that he cannot answer individual questions.

CLIENT/SERVER

TEST CENTER RX · LAURA WONNACOTT

Keywords on dynamic HTML pages can get the attention of Web search engines

My company develops Web sites for businesses. Lately, we've been developing dynamic Web sites using Active Server Pages (ASP) and Microsoft SQL Server. Can HTML documents that are generated dynamically be "found" by the popular Web search engines such as Yahoo and Lyos.

stepnen E. Ca

This is a problem for all developers who are serving dynamic content from a database. Search engines cannot index the file system in addition to a database. If you're using ASPs, all of the content that is stored in SQL Server cannot be indexed. However, there may be a few not-so-elegant work-arounds. Search engines can pick up the content

generated by ASPs. When executed, ASPs

return HTML pages. Search engines can then index the content that is generated from this page. Typically, though, the search engine is unable to follow links on those pages because they don't support cookies, and ASP applications require cookies to properly function. Although you can work around this by storing session state in the URL and disabling cookies, it defents one for the benefits of ASPs,

mainly rapid and easy development. In addition, many site using ASP include Keywords stored statically in the asp page or in other static pages. For instance, suppose you are developing a site for a music store—statically storing keywords such as music, CTO, addit to specific the statically storing keywords such as music, CTO, addition specific will allow search engines to find pages. Though you wouldn't statically stored in the suppose the statically stored in the second statically stored in the suppose the static static

titles you offer (that would defeat the purpose of using the database), you may attaicles store the latest and greatest titles. Depending on the size of your database, you could run a batch job at night to create static FTAIL pages for each entry in the database, with a simple link to the application. A single robotsin dex.html page could link to each static page. Also, check out the ASP eaching filter that

is available on the Internet Information Server 4.0 Resource Kit. This caches the HTML out-

put of an ASP page. The cached page consisting of the database information can be indexed. Though this was developed to optimize performance it also keeps HTML pages available for indexing.

Does Windows NT Version 4.0, Service Pack 3, use AppleTalk Data Stream Protocol [ADSP] to receive and transmit data while I am running services for Macintosh? I heard that ADSP is much faster than AppleTalk Filling Protocol [AFP] and Macintosh wicrosoft has taken

am hoping that Microsoft has taken advantage of this fact. Any information regarding this subject would be greatly appreciated.

David Minnio

I went to the folks at Microsoft for this answer. When using AFP, NT does not use ADF8 to receive and transmit data. Even with NT 50. AFP will continue to use ATPa transaction-oriented protocol. NT will continue to support ADSP for any Winfock applications the want to take advantage of it. For example, the Exchange clients for Macs use ADSP, the ATPA of the ATPA of the ATPA of the ATPA of the the ATPA of the ATPA of the ATPA of the ATPA of the United States of the ATPA of the ATPA of the the ATPA of the ATPA of the ATPA of the Compelling reason to do so.

You must implement AFP to create a File Server for AppleTalk networks. AFP provides a standard way for the Macintosh AppleShare client to access files and directories on a remote machine using the Chooser. Bottom line: AFP uses Datagram Delivery Protocol (DDP) to send packets back and forth

(DDP) to send packets back and forth. Microsoft official describe ADS as a connection-oriented protocol that makes possible the establishment and maintenance of full-duplex streams of data bytes between two codestins and Appletal kinerae. Similar to APR, ADSP uses DDP packets, though ADSP requires that an application on one open a connection to an application or other end. These applications are generally third-party applications that are specifically written touse ADSP and have "finitimate, esoteric, knowledge of how to talk back and forth between themselves."

In any case, according to Microsoft, "it's not a matter of which is faster than the other since both use the underlying DDP to send the bytes back and forth."

Test Center Technical Director Laura Wonnacott has been working with computers for 15 years. Test Center Rx applies the decades of experience at the InfoWorld Test Center to readers' technical problems. Send us your own questions at Test Center_Rx@ infoworld.com.





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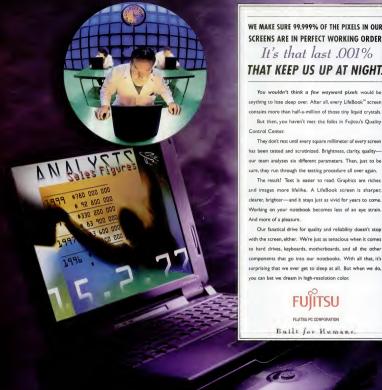
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SHIPPING

CYBERMEDIA appounced at last week's Internet World, in Los Angeles, Version 1.1 of its Repair Engine PC policy-based remote technical support product Enhancements to Version 1.1 include increased scalability and SNMP-based integration with Hewlett-Packard's OpenView, Comput-

er Associates'Unicenter and Tivoli TME network and systems management products. as well as Clarify and Remedy help desk solutions. Repair Engine 1.1 is available now on Microsoft Windows NT 4.0 and supports Windows 3,1. Windows 95, and NT clients, Pricing starts at \$2,375 for a 25user license. CyberMedia Inc.:

ANNOUNCED

http://www.cybermedia.com. LUCENT TECHNOLOGIES

introduced last week a system to simplify the way carriers allocate bandwidth among different types of traffic on the public switched telephone network. The WaveStar Bandwidth Manager can be used with existing central-office equipment and can manage 0.5 terabits of data per second.

The first release will support multivendor Synchronous Optical Network (SONet) infrastructures and will be released in the fourth quarter. Later releases will support ATM, IP, and wave-division multiplexing. Lucent Technologies Inc.: http://www.lucent.com.

MEDIAGATE will announce next week the EdgeCommander Universal Edge Server, a remote-access server with telephony capabilities. The product offers Internet access to real-time devices including telephone, fax, modem, and pager. It provides dynamic hybrid digital/analog modem call processing and computer telephony functionality on every port. EdgeCommander is available this quarter, with pricing starting at \$19,995 for a 24-port EdgeCommander. MediaGate Inc.:http://www .mediagate.com.

TALK BACK

To contact Networking & Telecom section writers, send e-mail to firstname_lastname@infoworld.com,

NETWORKING & TELECOM

Qwest, LCI to join forces

Carriers create fourth largest U.S. long-distance company

By Laura Kujubu

OWEST COMMUNICATIONS and LCI last week announced a \$4.4 billion all-stock merger agreement that will create the fourth largest U.S.long-distance telecommunications company, according to company officials.

Under the agreement, Qwest which offers voice, video, and data services via its 16,000-mile fiberoptic network - will gain access to LCI's sales, marketing, and distribution channels, its intelligent network platform, and its customer care and billing system.

LCI - a second-tier long-distance telecommunications carrier will take advantage of Owest's expertise in data services, as well as its fiber-optic network.

The merger is expected to be completed by June, said H. Brian Thompson, president and CEO of LCI, who will become vice chairman of Owest's board of directors after the completion of the merger.

Analysts believe the agreement is significant for both companies.

"Qwest is sending a clear message that they are going to be a major retail player in the telecommunications market ... and will compete by leveraging their backbone network," said Sanjay Mewada, a senior analyst at the Yankee Group, in

According to leff Phillips, an analvst at TeleChoice, in Verona, N.I., the deal is mutually beneficial because LCI needs to make more of a presence in the data world and Owest could use LCI's strong nationwide salesforce with an established distribution channel. Another analyst agreed.

"They are two of the newest telecommunications companies and [Qwest's] fiber is advanced in terms of what they can do with it, and LCI has innovative things going for it such as its marketing expertise," said Mike Perez, an analyst at Frost & Sullivan, in Mountain View, Calif. "LCI is established in long-dis-

tance services, and Owest is an upand-coming company focusing on Internet telephony - so it will be interesting to see how they will conOwest and LCI merger by the numbers

A merged Owest/LCI would become a telecommunications powerhouse. The combined company would have A market capitalization of more than

C11 billion An employee base of about 5,800

(1,800 from Owest and 4,000 from LCI) A combined customer base of about 2.3 Offices in more than 70 U.S. locations

solidate those two operations in the long run," Perez added. If this deal goes through, which

I think it will, this will create the mighty four - MCI, AT&T, Sprint, and Owest - in terms of long distance." Perez said.

Owest Communications International Inc., in Denver, can be reached at http://www.gwest .com, LCI International Inc., in McLean, Va., can be reached at http://www.lci.com.

OpenView Universe '98

HP brings software to the fore

By Emily Fitzloff and Martin LaMonica

HEWLETT-PACKARD President and CEO Lew Platt used his keynote address at the OpenView Universe '98 conference in Boston earlier this month to emphasize that HP is still a contender in the software business. In particular, he outlined the direction HP plans to take with its IT Service Management program, which includes its OpenView network management platform (see box at right).

Platt asked that industry watchers not mistakenly assume that because HP has a first-rate hardware business, it must have a second-rate software business, saying that HP is "big enough to do both.

By mentioning this, Platt highlighted what Ann Livermore, vice president and general manager of HP's software division, called "an identity crisis" that led the company to emphasize hardware at the expense of software.

Now HP is looking to get back

in the software game, specifically in network management.by focusing on IT service manage-

ment, defining and managing service-level agreements, and easing desktop administration.

At least one long-time OpenView customer welcomed the goals expressed by the company.

"I completely agree with the strategy ... of tving IT services directly to business processes. They already had the technology and now they have the philosophy and methodology too," said Brad Elmenhurst, systems integration manager for DCAC/MRM, a division of Boeing in Renton, Wash.

However, industry analysts were more cautious as to whether the new OpenView strategy will be enough to help HP catch up with systems management leaders Tivoli Systems and Computer Associates. According to Rick Villars, direc-

tor of network software at International Data Corp., in Framingham, Mass., the challenge facing Open-View is "to be perceived as something other than just a network management tool for HP systems."

However, Villars added that "OpenView is getting a more comprehensive portfolio and I'm confident that they're not going down

Hewlett-Packard Co., in Palo Alto, Calif., can be reached at http://www.hp.com.

OPENVIEW GOES TO THE WEB

longside its strategy announcement. Hewlett-Packard revealed new OpenView products. ■ The company announced Web-based

software, called MeasureWare Service Reporter, that measures performance against service-level agreements. Web-based software for ISPs, Fire-

hunter was announced It monitors and manages e-mail, news, and Internet services, and will ship next month. HP said it is shipping ManageX 3.0, the latest version of the Windows NT systems and Microsoft BackOffice applications management software acquired from NuView.

HP will enhance its NetMetrix hardware and software line to support ATM and E1 networks, and will ship enhanced T1 and V-series probes in the third quarter of this year.

 OmniBack II 3.0. claimed as the first IT service management-enabled backup and restore software, will ship in June for Unix and Windows NT envi-

- OpenView IT/Operations central manager and the complete OmniBack Il backup product will be available the second half of this year on Sun's Solaris

. AssetView 3.0 is expected to ship in the third quarter and will include asset discovery, procurement, management, and reporting capabilities.

REGULATORYROUNDUP A telecommunications news byte from the United States and Europe

BOSTON AND BRUSSELS, BELGIUM The planned merger between MCI and WorldCom ran into snags last week both in the United States and abroad. The European Commission has launched a second-stage investiga-

tion into the deal because of concerns about the parties' combined control ove the supply of Internet backbone services, and the U.S. Department of Justice is rumored to be widening the scope of its antitrust inquiry in order to investigate the same thing. The European Commission has four months to decide if the merger is compatible with its competition guidelines.

Separately, Spanish telecommunications operator Telefonica de Espana announced an alliance with MCI and WorldCom. The company was previously part of the Concert joint venture between British Telecommunications and MCI when those two companies had plans to merge.

Wireless data lags behind voice

DESPITE THE UBIOUITY OF mobile voice services, industry observers are predicting that wireless data technology is several years



voice services could in some ways encourage creation of data services it could hinder them in other ways.

Currently, there are about 199 million mobile phones and communications devices in use globally. with that figure is predicted to rise to 529 million by 2002, said Philip Redman, an analyst at the Yankee

Group, in Boston But Redman said the take-up for wireless data applications is now probably less than 5 percent of all wireless applications in the United States - although it is difficult to accurately estimate the number because it is not possible to tell if air time is used for data or voice.

Because many data applications are designed to use mobile voice networks, their development has been affected by a standards war in the world of digital voice.

At the moment, wireless voice specifications are splintered, and only 53 percent of the wireless infrastructure is digital, according to the Yankee Group.

In 1997, wireless infrastructure globally was 3 percent Code Division Multiple Access, 32 percent Global System for Mobile communications, 5 percent Time Division Multiple Access, and 13 percent Personal Digital Cellular. These are all digital specifications for the air interface - how the signal is sent via radio frequencies. The other 47 percent of the wireless infrastruc-

ture is analog technology. The fact that these competing

technologies are all widely implemented could adversely affect data services because there is no single standard to which to write, obcorners said

"The different standards are confusing ... it's slowing [technology adoption| down," said Takafumi Shibata, assistant manager for the mobile multimedia department at ▶ WIRELESS page 40

XcelleNet to unveil remote-management suite

By Emily Fitzloff

XCELLENET IS EXPECTED to announce this week the availability of its RemoteWare Managed Client. a software suite designed for the management of remote clients.

According to XcelleNet President Corey Smith, the company targeted remote users because the cost of supporting remote PCs is much higher than it is for LAN-based computers. In addition, the number of remote users is continuing to skymcket, he said

Smith said RemoteWare aims to

address these facts by ►The Remote-"mimicking the functionality of traditional desktop and systems management suites, but over dial-up connections"

The suite consists of four core products — RemoteWare Software Manager, RemoteWare Inventory Manager, RemoteWare AntiVirus Manager, and RemoteWare Backup

According to Rick Villars, director of network software at International Data Corp., in Framingham,

Ware Managed Client suite's cost begins at \$375 per dient.

Mass., RemoteWare gives mobile users many of the same management capabilities that locally connected users have. "[RemoteWare] extends

to remote users canabilities like software distribution, anti-virus, backup, event alarms, and applications and configuration management." Villars said.

Additionally, XcelleNet is working with leading enterprise-management vendors to integrate RemoteWare with offerings from

those companies

as well

According to Smith, XcelleNet will reach "pinnacle status" (the highest level of partnership and integration) with Tivoli Systems in the second quarter of this year. Smith also said he expects integration to be completed with Microsoft's Systems Management Server by late summer and that XcelleNet is pursing integration with Computer Associates' Unicenter TNG

XcelleNet's RemoteWare Managed Client suite is shipping now on Windows 95

XcelleNet Inc., in Atlanta, can be reached at http://www.xcellenet

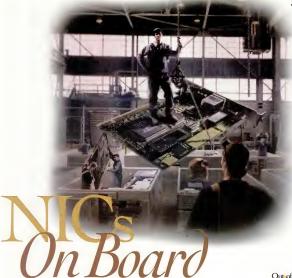
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NETWORKING & TELECOM

3Com-Siemens partnership to yield voice-data network gear

By Stephen Lawson 3COM AND SIEMENS last week announced plans for the first products to emerge from a

partnership announced last year. The partnership is focused on the convergence of voice and data networks, and brings

a dominant data networking vendor together with one of the largest voice equipment players. The companies are positioning themselves to cater to a boom in demand for combined voice and data applications.

As part of this plan, the companies will in-

converged voice and data into enterprises. The products, based on 3Com's SuperStack II LAN switch line, will leverage the IEEE 802.1p standard for traffic priority, as well as

troduce a line of stackable products to bring

An H.320/H.323 gateway to translate voice traffic to IP-based data networks will be introduced in the third quarter of this year as part of the SuperStack II line. In the fourth quarter, 3Com will market a SuperStack II communications server, based on Siemens' Hicom technology, to support advanced telephony features on IP networks.

In addition, 3Com will combine its Total Control remote-access technology with Siemens' telecommunica-

► Siemens plans to market 3Com SuperStack and CoreBuilder products under its own name.

tions switch technology to

create a multiservice central office gateway for carriers and ISPs. The multiservice Internet gateway is designed to help service providers offer customers a variety of options for communication via IP or conventional voice net-

works. Carrier customers will be able to configure these options through a graphical interface, the vendors said.

The multiservice gateway is scheduled to ship this spring.

3Com Corp., in Santa Clara, Calif., can be reached at http://www.3com.com. Siemens AG, in Munich, Germany, can be reached at http://www.siemens.com.



Continued from page 38

Nippon Telegraph and Telecommunications Tokai Mobile Communications Network, in Nagoya, Japan.

Currently, third-generation versions of these specifications are being worked out, but widespread deployment is not expected for four years. But when the versions do arrive, they should boost the data-services market. The third-generation technologies aim to offer 64Kbps to 20Mbps wireless data transmission speeds. The high-end 20Mbps speed would be for fixed wireless applications, with 64Kbps at the low end for mobile wireless.

Satellite technology should also give a boost to wireless data applications.

Low Earth-orbit (LEO) satellites hold the best promise for data, because they more easily allow for two-way communications. With geosynchronous Earth-orbit (GEO) satellite systems, such as Hughes Network Systems' DirecDuo, you can get 400Kbps download speeds, but you need a telephone-line return.

But LEO systems are just getting launched - literally. For example, the first of the 48 satellites to be used by the Globalstar system, which was developed by Qualcomm and Loral Space & Communications, was launched in February. The system will not be ready for public use for a year, officials said.

Teledesic, the brainchild of Microsoft Chairman and CEO Bill Gates and cellular tycoon Craig Macaw, will not have all of its 288 LEO satellites up and circling the globe until 2002. Iridium is on track to offer global services by September, but the company does not foresee hitting 5 million subscribers until 2002.

Marc Ferranti is the New York bureau chief for the IDG News Service, an InfoWorld affiliate.



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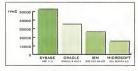
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Wirtual Administration Tool for Windows NT 1.01428 = ImageCast 2.0428 = Corel Ventura8. Release Candidate 1420 #FriendlyNet 8+2 FS3208 and

F53208Plus42D "Loose Cables ...

NT ADMINISTRATION FIRST AID KIT

Although network managers have high hopes for the administration relief that might arrive when Windows NT 5.0 finally appears, NT shops that need immediate alleviation can turn to the latest FastLane Technology tools for help if you're preparing the enterprise for a future migration to Windows NT 5.0 FastLane's Phoenix Domain Reconfiguration Tool 1.1 makes it easy to consolidate

your existing NT domains. (See review on this page.) To provide day-to-day assistance for overloaded NT administrators. FastLane's Virtual Administration Tool for Windows NT 1.01 allows you to delegate basic NT management tasks to other IT staff. See our review on page 42B.

TEST CENTER MAYHEM

This week's Loose Cables tells the tale of some puzzling test road blocks experienced with the latest Test Center Comparison of security-auditing software that unearthed some problematic practices. The product reviews team also suffered when virus-plaqued reviews files circulated undetected. See page 42H for the full story.

HOW WE REVIEW

Enterprise Networking reviews examine new products, focusing on their usability, features, and suitability to task. Our expert reviewers rate shipping products on a scale of cold to hot. The authors do not employ the extensive analyses used in Comparisons, so their conclusions may be different.

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ENTERPRISE NETWORKING

Product Reviews

> Server anti-virus software

NAV adds NetWare protection

By Victor R. Garza IDITORE HAVE A WAY of creeping onto individual workstations undetected But once

they find their way onto the network, the productivity havoc viruses create can multiply exponentially. With Version 4.0 of Symantec's Norton AntiVirus (NAV) for Net-Ware, Symantec builds on

its solid and flexible desktop product by adding NetWare file server support to protect and eradicate viruses from the Novell LANs in

NAV has strong competition when it comes to NetWare's defense Intel LANDesk Virus Protect. Version 5 offers NetWare virus protection, and Computer Associates' InocuLAN for NetWare coupled with its Chevenne AntiVirus clients adds a domain-centric management philosophy. Both of these products present strong rivalry for NAV as it continues to push into the



server causes an appropriate warning to pop up.

enterprise arena. Added heuristic technologies

Attempting to fight the good fight against viruses on the network. Norton brings new heuristic technologies to play in order to track down viruses: Bloodhound, Bloodhound-Macro, and Striker components. These technologies are balanced by NAV's centralized and easy-to-use management console.

Bloodhound and Bloodhound-Macro work by augmenting the standard approach to virus detection. Instead of looking for a specific virus "signature" or using standard heuristic-detection methods, Bloodhound and Bloodhound Macro use a hybrid of classic static and dynamic algorithms for detect-

ing new and unknown viruses. Striker does the same when going after polymorphic viruses. In my testing, I found that these

new heuristic technologies were able to easily find known viruses with which I infected the server. Bloodhound even allowed me to control the amount of virus paranoia NAV had. Selecting less paranois made Bloodhound scan for viruses faster; selecting more paranois meant NAV took its time to search files more thoroughly.

However, although I was able to detect viruses within .ZIP archives on a NAV client, the server version acted as if nothing was amiss. But when I unzipped the virus, NAV saw the file during the next scan. Symantec states that the current server version cannot see viruses within ZIP archives, although this isn't stated in the documentation.

Smooth server install, tedious for clients

Installation was a breeze on my NetWare 4.11 server, I simply ran the installation on a Windows NT workstation running the Intranet-Ware client. NAV took care of loading all of the files onto the file server and my local drive and changed my AUTOEXEC.NCF so that it could load the NAV NetWare Loadable Module. (I was also allowed to change it myself.)

NAV also supports Novell Directory Services or bindery emulation. making NAV deployment and administration even easier. Once de-► NAV page 42F



Norton AntiVirus for NetWare 4.0

Symantec's anti-virus software introduces new technology to defend your servers and workstations, while adding strong scheduling and administration tools for detecting standard.polymorphic.and macro viruses.

- Pros: Strong scheduling capabilities; easy-to-use interface: virus-list updates free for the life of the product; extensive
- automatic notification for found vinues = Cons: Not able to detect viruses within ZIP archives; Windows NT Server version sold separately.
- Symantec Corp., Cuperting Calif.: (800) 441-7234 (541) 334-6054: fax: (541) 334-7474; info@symantec.com; http://www.symantec.com,
- Price: One server and 10 workstations \$499.95, Site licenses are also available
- Platforms Conver NotWass 3 11 3 12 4.1. 4.11. NetWare for OS/2 or SFT-NI: Clients supported: Windows 3.1, Windows 95, Windows NT, Macintosh,

▶ Windows NT administration Phoenix shaves extra time off

domain consolidation projects

By Keith Duplissey OR ENTERPRISES deploving Microsoft Exchange and looking to Windows NT 5.0 and Active Directory on the horizon, domain consolidation seems to be the order of the day. Rolling out these new technologies in multiple domain environments is a potential disaster, to say the least. Up to

the plate steps FastLane Technology with Phoenix Domain Reconfiguration Tool 1.1, offering a solid solution for proactive migration activity.

Phoenix helps automate the reconfiguration or flattening of Winto days - possibly even hours.

dows NT domains. What could normally take weeks or months to do manually, Phoenix helps reduce The primary purpose of the



through the domain reconfiguration process when you're ready to migrate users.

product is to migrate users and global groups to a new domain, then update Access Control Lists (ACLs), user rights, and so on so that the account in the new domain has the same basic access as the account in the old domain. And even though Phoenix is powerful enough to migrate massive domain structures, it is still flexible enough to

THE BOTTOM LINE Phoenix Domain Reconfiguration Tool 1.1

Phoenix offers a solid solution for large organizations looking to flatten their Windows NT domain structure, especially when manual conversion is the alternative.

- Pros: Simple interface: good documentation: walks you through the process of roncolidation
- Cons: Distributing processes in large environments can be difficult. = FastLane Technologies Inc., Holilax,
 - Nova Scatia: (800) 947-6752: fax: (902) 421-5356: sales@fastlanetech.com: http://www.fastlanetech.com
- Price: \$12 per account. Platforms: Windows NT Server 3.51 and 4.0.

migrate single objects if desired.

Wizard guides migration phases There are six components in the reconfiguration process: migrate the users, migrate global groups, update local groups, update ACLs, ad-

PHOENIX page 42F

▶ Windows NT administration

VA Tool slices and dices NT chores to other users

By Keith Duplissey

WINDOWS NT network can be difficult to administer - to say the least. With this laborious task before you, not to mention several other chores and an inbox full of e-mail, it would be nice to delegate more simple management tasks to others. With FastLane Technologies' Virtual Administration Tool for Windows NT 1.01, you can delegate basic tasks to others in a granular fashion.

The Web-based Virtual Administration (VA) Tool lets a VA administrator create virtual domains and assign specific rights to virtual administrators. These virtual administrators can be ordinary domain user accounts, so you don't have the security risk of providing full administrator access to users that simply reset passwords. However, Mission Critical's Enterprise Administrator 4.5, which tackles the same problem, is easier to set up

and use than VA Tool. FastLane's Solution could also use a better interface

Involved installation

If you don't get all VA components installed in the correct order, you may have problems later. VA Tool requires Windows NT Server 4.0 with Service Pack 3, as well as Microsoft's Internet Information Server 3.0 with Active Server Pages.

Once I had all these applications installed on my NT Server, I was ready to install VA Tool. After installation. I also had to manually start the VA Tool Server service and restart the Peer Web Services.

Configuring the product was much easier. You create the virtual domains and virtual administrators. Here you can be as generic or as specific as you like. You can add specific user accounts or add everyone in the domain(s). The same goes for administration rights.

A VIRTUAL ADMINISTRATOR can access only certain areas of a user account, such as password resets and user-name changes.

Count on about an hour to install and configure the virtual domains with VA Tool Manager, which can also run in multidomain networks with proper trust relationships.

Easy delegation, administration I used the VA Tool Manager to cre-

ate two virtual domains and a couple of virtual administrators. The first domain I called Help Desk: It had one virtual administrator that could only reset passwords and unlock accounts. The other domain had an account administrator with two virtual administrators.

VA tool allows each virtual administrator to have separate accesses. So in my second domain, I had one administrator with access to create and modify accounts and the other could only delete

Because the VA Tool client is browser-based. virtual administrators could now manage from almost anywhere on the network without having to worry about client software on the system they were using.

The client offers all of the same user properties as NT's User Manager for Domains, including some

statistics. Global groups are also accessible when you first log on, although I would prefer to see the users screen or a split screen in-I did find one feature that let me

unlock or reset the passwords with the click of a button from the users screen, including multiple accounts simultaneously. The password has a random string generator.

The VA Tool residing on the server will time out and drop your connection if the client is not being used. This tightens security, but it's also a pain to keep logging on while you're in an administration session. Although the VA Tool has a few

THE BOTTOM LINE Virtual Administration Tool for Windows NT 1.01

Virtual Administration Tool lets administrators delegate specific administration rights so others can execute related tasks from a Web client, but initial setup is complicated

= Pros: Convenient Web interface: specific task delegation: quick password

m Const Involved installation and setup nrocess: must run on NT 4.0 with Internet Information Server interface could use some tweaking.

= FastLane Technologies Inc., Halifax, Nova Scatia: (800) 947-6752: fax: (902) 421-5356-cales@factionetech.com http://www.fastlanetech.com.

 Price: \$14 per user account: site license pricina available. # Platform: Windows NT Server 4.0.

quirks, it is worth a look. But more complex enterprises should turn to Enterprise Administrator.

Keith Duplissey is a Novell and Windows NT LAN Administrator for Citicorp, in San Antonio. He can be reached at keithd@rocket ship.com.

▶ Disk image duplicator

Low-cost ImageCast saves client configuration overhead

By Mike Avery

ISK IMAGE DUPLICATORS ALlow system managers to easily migrate, upgrade, install, and repair systems. They can transform a typical installation from a four-hour ordeal to a 20-minute job. Micro House International's ImageCast 2.0 joins a crowded field of powerful, useful tools that can save system managers - and their employers - time and money.

ImageCast differentiates itself on the basis of price and its capability to multicast, which reduces the load on the network. It adequately performs basic disk duplication, but it lacks some capabilities offered by its contenders. For exam-

ple, both Innovative Software's more expensive Ghost (which can also multicast) and PowerQuest's similarly priced Drive Image Pro allow you to create images of, or restore, single partitions on multipartition drives, which ImageCast cannot do. Plus ImageCast often reported inconsistent statistics.

The multicast advantage

Micro House suggests you config-

ure ImageCast with a client/server setup using the multicast User Datagram Protocol (UDP). This allows the server to send data to a number of PCs at the same time, so only one copy of the data is sent over the network even when targeting multiple PCs.

The first generation of disk image programs passed as many copies of an image over the network as there were PCs being

installed, often overwhelming a network's capacity. Later disk image duplicators relied on broadcast technology that passed only one copy of the data but required each node on a subnet to look at the data. Multicasting sends one copy of the data to the correct PCs.

To make it easy to implement this setup, Micro House provides a utility for creating boot disks for the clients. The utility supports a number of the most common network interface cards and lets you easily add new ones. In addition to the



client diskettes for almost any PC. It's easy to add additional network interface cards to the package.

client/server mode, ImageCast can also work in a stand-alone mode. similar to that offered by the earliest image duplication programs.

Once the server is up and the client is booted, either the user creates a disk image and loads the disk or the system manager at the server does so. But it's not possible to create images of, or restore, single partitions on multipartition drives.

Inconsistent statistics

As ImageCast operates, it provides performance reports and estimates

of when an active task will be completed. The statistics shown on the client and server however were very different. At one point the client said it was writing 15MB per minute, although the

server insisted that it was copying 22MB per minute. Also, while creating an

image of a disk, Image-Cast did not notice that drive partitions were mostly empty and estimated more than three hours to create an image. However, the creation finished in one hour. Copying the data to

PCs was quicker and painless. When I re-ran the test with two PCs, the copy time was no slower than copy-

ing the data to a single PC - one of the benefits of multicasting.

Using the online help, I was able to deduce that I needed to install a patch on my Windows 95 machine to allow UDP multicasting to work. but the help files did not explicitly cover this requirement. ImageCast offers some key ad-

vantages such as multicasting and its low price. Its inconsistent statistics, though, left me feeling uncertain about the product's overall reliability.

THE BOTTOM LINE ImageCast 2.0 Although less flexible than some of its com-

petitors. ImageCast does an adequate job of carrying out basic disk duplication. = Pros: Allows multiple simultaneous

- system copies to happen very quickly. ... Cons: Does not recognize partitions: confusing, inconsistent statistics; slow image creation.
- ... Micro House International Inc., Boulder, Cola.; (800) 926-8299, (303) 443-3388-for-(303) 443-3323sales@microhouse.com:
- http://www.solutions.microhouse.com. Price: \$795 for 100 PCs, or \$795 per
- technician for unlimited PCs. Platforms: Windows 3 x. Windows 95.
- Windows NT 4.0, DOS. Clients: Boot up under DOS but may be imaged and rebooted to run DOS, Windows 3.x, Windows 95 NT Hoir and NetWeep

Conservative system managers might prefer to stick with more costly but less quirky products.

Mike Avery (mayery@mail.other when.com) is a senior networking consultant at SF Consulting, in Port Neches, Texas.



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Windows desktop publishing software

Corel Ventura 8 proves worthy upgrade for users' publishing needs

By Mike Heck

Y EXPERIENCE is that longdocument publishers are a fairly conservative group, not quick to upgrade with every new software release. That's certainly true of Corel Ventura users - some are still very comfortable running early DOS versions

Still, my tests of Ventura's latest beta release - Corel Ventura 8. Release Candidate 1 - provided ample reasons to seriously consider upgrading your network users. Furthermore. publishers working solely



Performance and compatibility

Two main reasons for sticking with Ventura 3.0, for instance, were speed and an interface built for formatting long documents. These needs were somewhat overlooked in previous Windows releases, but certainly not in Ventura 8.

The version of the software I test-

ed operated swiftly and without incident on a 120-MHz Pentium system with 32MB of memory. Onening and saving files was twice as fast as with Ventura 7, and formatting commands garnered a crisp response. Moreover, the labyrinth of inconsistent formatting options is history. For example, menus now form a logical hierarchy, so I quickly jumped from creating master

pages and specifying frame layouts to indicating

paragraph characteristics. From the outset, Ventura used the notion of tags (analogous to style sheets) for layout control.

But in past Windows versions, formatting could only be applied to individual paragraphs with an override command. I really liked Ventura 8's modeless tag dialogs, which let me easily apply changes to one paragraph, create a new tag, or apply updates to all objects sharing an existing tag. Also, I previewed paragraph tag changes before committing them to an entire

Because tags are essential, I often used the redesigned Tag window to ter locating an appropriate format, like a headline using a particular font, I quickly applied it by dragging and dropping. Similarly, tags are copied to other publications. Moreover, frames are now always tagged and can be modified using a drop-down list or the Tag window.

Not just for long documents

If you never thought of Ventura for designing intricate page layouts, you should reconsider. Ventura 8 provides a long list of bit-mapped effects, such as duotones. In fact, you can use most of the plug-ins available for Corel Photo-Paint.

Most impressively, I edited an imported Corel Draw 8 vector illustration using Ventura's drawing tools, converted the shape to a picture object, then exported the bit map to a .GIF file - all without leaving Ventura 8. Wrapping text around these objects and similar

Care and feeding of a growing network

VENTURA 8'S built-in drawing functions handle many high-end illustration tasks.

faster, because file sizes are smaller

when printing to a file. As you'd sus-

pect, Ventura 8 is also tightly inte-

grated with other Corel products

through extended OLE. For in-

stance, I edited a photo in place us-

ing Corel Photo-Paint 8, then mod-

ified text through WordPerfect 8.

accomplished.

(WordPerfect 8, Photo-Paint 8, and eight utilities will ship with Ventura 8).

Moving to the Web

Ventura 7 included substantial Internet publishing features, which this version improves upon. For example, I used the new HTML Frame option to define the appearance of a Table of Contents pane and how the main frame looked when viewed in a browser, Also, I published with the Cascading Style

advanced layout tasks were easily Sheet option to retain absolute positioning of page elements. Other improvements let me set Furthermore, Version 8 adds imthe on-screen picture resolution for

age map support; more complete individual frames; print band-free conversion of index entries to hygradients (Adobe PostScript 3 is perlinks; and FTP, news, and mailsupported); and complete iobs to protocols.

Corel Ventura 8's many behindthe-scenes and visible improvements make it faster and easier to work with pictures, object tags, color management, and printing. I didn't encounter any problems that would keep administrators in charge of older versions from upgrading their users.

Mike Heck (mike heck@infoworld .com) is a contributing editor and manager of electronic promotions at Unisys, in Blue Bell, Pa.

OUICK BYTE

Asanté offers low-end switching hubs at friendly price points

FriendlyNet 8+2 F53208 and FS3208Plus

santé's FriendlyNet 8+2 Switches - the FS3208 and FS3208Plus - are solid lowcost alternatives to standard Ethernet hubs that can help alleviate network congestion. If you don't need the management features offered by higher-end managed switching hubs, you should consider these units. Unlike standard hubs, switching

hubs forward packets only to intended recipients rather than having them traverse the entire LAN.

Asanté prices its switches well below competing products with similar capabilities from Intel and 3Com. At approximately \$29 and \$39 per port for the FS3208 and FS3208Plus, respectively, both units are particularly appealing for system managers closely watching their IT budgets.

Although the switches appear identical, each unit differs in its dynamically allocated packet-buffer memory space and the number of Media Access Control (MAC) addresses stored in its tables. The FS3208 supports 32 MAC addresses and provides 1MB of memory, and the FS3208Plus is designed to support larger network segments by offering 3,000 MAC ad-

dresses configured with 4MB of memory. In addition, the Plus version includes a rack mount kit, a feature you must purchase separately for the FS3208. Each unit provides eight

10Base-T ports, two 10/100TX ports, and an uplink port. However, using the uplink port disables port 9, because they're shared. On the plus side, the uplink port expands the capabilities of the FS3208 by connecting to the network backbone and filtering traffic not destined for the switch.

The switches were a breeze to install. I connected two separate hubs to each switch, then connected various workstations to each hub. Next, I connected both Net-

Ware and Windows NT servers to the 100Mb ports. A helpful dipswitch in the rear allowed me to toggle full- or half-duplex for each switch's 10 usable ports.

The front panel displays amber

------------THE FRIENDLYNET 8+2 SWITCHES

offer easy accessibility. Both are rack-mountable and provide helpful LED indicators.

and green LEDs indicating connection speed, link/activity, and full duplex/ collision. Another useful feature is the NWay autonegotiation on 10/100TX ports, which automatically determines the network speed of a port. Each switch employs the store-and-forward switching method.

Mostly, both units worked as ex-

pected. I did experience problems when changing connections on the 10/100TX ports, due to the way the unit learns addresses. As a work-around, I needed to reboot my servers and recycle the FS3208's power. Afterward the switch worked fine.

I also had trouble when connecting the switch to a low-end Linksys hub (without a Multiple Document Interface (MDI) or MDI-X control). The hub should have worked while connected to any port on the switch, but it worked only when

connected to the uplink port. Aside from these anomalies, the switches performed smoothly. If you're looking for an entry-level switch for a small to medium-size network. Asanté's FriendlyNet FS3208 or FS3208Plus may be just

Asanté Technologies Inc., San Jose, Calif.; (800) 662-9686, (408) 435-8388; http://www.asante.com; \$295 and \$395

what you need.

- leff Senna

THE BOTTOM LINE

Corel Ventura 8, Release Candidate 1

This desktoo publishing software takes excellent advantage of the Windows environment to reduce long-document production time and effort and boister image handling and graphic design tools. It promises to be a useful upgrade for Windows publishing users.

- Pros: Speedy performance:intuitive user interface containing streamlined dialogs for tagging pages, frames, and text; bit-mapped special effects; edit and convert graphics objects without other applications; very good HTML
- output. Cons: None significant.
- Corel Corp., Ottawa; (800) 772-6735; http://www.corel.com.
- = Price: \$895; \$199 upgrade from any version prior to Version 7 and competitive
- products. Ventura 7 upgrade: \$99. · Platforms: Windows 95 and Windows
- = Ship date: April.





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ENTERPRISE NETWORKING: PRODUCT REVIEWS

NAV

Continued from page 42A

ployed, I could either run scans directly from the NetWare console or I could use the remote administration management console.

Using LiveUpdate, I could easily get the latear NAV virus updates off the Internet and onto my servers. Although taking care of the servers was easy, I couldn't "push" a NAV client version onto the network clients. I had to install client by client. The NAV CD contained software for a wide range of clients, such as Windows NT, Windows 95, Windows 3.1, and DOS, But again, I had to install the software on each client.

Flexible management

NAV's remote administration provides a pichotron of scheduling options and the ability period to scan all file types (including DOS and Macintosh), certain file types, or to exclude certain files. Iwas also able to scan a particular NetWare volume; set whether I wanted the files going to or from the file server being going to or from the file server being seasoned for viruse; scan NetWare Loadable Module memory; and set immediate, real-time, or scheduled scans.

Removal of viruses is as important as detection. NAV was just as good at removing a



displayed from Norton AntiVirus, giving up-to-date information on virus scans.

viruses as it was at detecting them. Administrator notification options were extensive, including alert via e-mail (albeit via Mail Handling Service) pager, or network broadcast.

Overall, NAV for NetWare provides strong virus detection and removal, along with an easy-to-use centralized NetWare management console. I think this is a strong product, although to be truly useful in the enterprise, it should add the capability to deploy the client software across multiple workstations from the console that Intel's LANDesk has.

Victor R. Garza (victor_garza@infoworld .com) is a technology analyst at the Info-World Test Center who covers networking and telecommunications products.

Phoenix

Continued from page 42A

just user rights, and finally move computer accounts to the target domain. Each step is handled with a wizard-type interface. Phoenix also provides the ability to undo each step of the migration along the way. Complete reporting complements each step so you can see details of the migration.

There are essentially three phases to each of the six migration steps. First you must create a list or map of what needs to be done. This step may take some time, depending on the size of your network and the time it takes to get lists of all computers or users. After completing the map, Phoenix asks you a few questions about how to handle the objects, such as what log, in script to specify or which computers to search for shares.

The second phase is Preprocess: The system validates the required administrative access to carry out the step and generates a report of what will happen. It also provides a method for breaking the map file into smaller parts for distribution across several servers.

The last step is the actual migration.

Through each phase of the six migration.

Through each phase of the six migration components, information is written to the log file, and you have the option to display the log when the migration is completed.

Useful utilities lighten the load

In addition to the main Phoenix application, there are several external utilities provided. Phoenix Distributor allows the intense processing of the ACLs, local groups, and user rights to be distributed across many servers or workstations in the domain to reduce network traffic. FastLane also includes utilities specifically for processing ACLs, user rights, and local groups.

An included resource kit provides a copy-

password utility. This will copy users' old passwords to the new domain. However, it is an unsupported tool and does not work on all versions of Windows NT.

Reducing months to minutes

I installed Phoenix on my Windows NT 4.0 test server without any problems. The install took only a few minutes, and I was ready to begin the consolidation. The user manual is very comprehensive,

walking you step-by-step through the entire migration. In addition, Phoenix itself graphically shows you the progress of the project. The only step I had any problems with was

preprocessing the user accounts, but the error I received was listed as a note in the user manual. After I fixed my access to the source domain, everything went fine. When I completed the migration, updated

the ACLs, and moved computer accounts to the target domain, my new domain had everything it needed. My users were able to log in and had all the appropriate access. Even though I only migrated a handful of

even though rough migrates a standard to users, the time I saved with Phoenic creating the accounts and updating their access rights was well worth the price of admission. Compare that recovered time against having to annually convert a 4,000-object domain, and you can imagine the impact Phoenix will have. For enterprises trying to consolidate or flatten their domains, Phoenix is a definite time and cost saver.

Keith Duplissey is a Novell and Windows NT LAN administrator at Citicorp, in San Antonio. He can be reached at keithd@ rocketship.com.

<u>KEYS TO</u> INCREASING PRODUCTIVITY









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ENTERPRISE NETWORKING: PRODUCT REVIEWS

LOOSE CABLES · TEST CENTER

Test Center password neccadilloes and Word macro microbes

HE RATSTERS have a hard enough time keeping up with what's hip on the silicon circuit without having to remember 12 different passwords for the various pieces of infrastructure that make up our test beds. Thus, it has become common practice for analysts to use the same passwords when configuring servers, clients, routers, firewalls, etc. This saves time and caffeineaddled brain tissue, but it can also lead to interesting problems. Case in point: This week's Test Center Analysis on security auditing tools (see page 54), includes Internet Security Systems' Internet Scanner 5.0 for Windows NT. Internet Scanner usually goes

around a network knocking on doors and rattling doorknobs to see what shakes out Occasionally it reveals more intimate data: Some scans pointed out writable Registry keys on NT machines.

How can a network scanner reach so far into the inner workings of a remote NT system? Is NT really that wide open?

Not really. Thanks to our Test Center "best practices," both the scanning and target hosts had NT Administrator accounts with the same password. When checking out the Registry on the remote machine, our NT scanner tried to authenticate itself with the credentials of the currently logged-on user, which happened to be the same as the Administrator on the remote machine, Bingo - Administrator access to the machine's Registry. thanks to NT's pass-through authentication.

We verified this via remote connections using regedt32, along with different password iterations on each machine. When the Administrator accounts had identical passwords, we could access both root keys and had write access to almost all values. When the passwords were different, we could not remotely, access the Registry,

When we reran Internet Scanner with different Administrator passwords, we found it to be less vulnerable. The writable Registry keys found earlier were no longer identified because our scanning host no longer had privileged access to target NT hosts. The moral of the story; We recommend avoiding identical Administrator account passwords on multiple NT domain controllers.

Your file's just been 'capped'

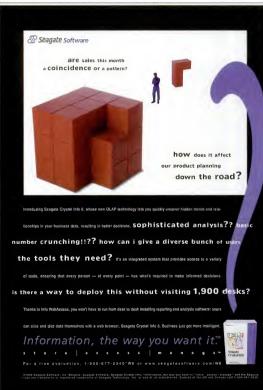
Why is it that when one system glitch is uncovered, five more rear their ugly heads faster than you can regain cursor control? Picture this chain of disaster: It's deadline day and a reviews editor applying a line-count macro to a late-breaking review triggers an alarm. Nosy Intel LANDesk Virus Protect snickers at the editor (in real time, of course) - the guilty pathogen: the WORD.CAP macro virus.

To her chagrin, Virus Protect won't clean the file. It won't delete the file. The help desk isn't picking up the phone. So the optimistic editor reboots. But the next Word file opened only propagates the infection. Soon review files shared over the network are being "capped" — editing wheels grind to a halt.

Several keyboard swats and Word normal dot replacements later, the system seems disinfected. After a second virus fighter, Command Software's F-Prot, is installed, the process repeats: Virus detected, file cleaned, editor reopens the review ... virus still there!

Finally, the editor's cursing is heard down the hall and another rat joins the fray. A third foot soldier, McAfee VirusScan, is installed. The real-time rumble begins. Virus detected, file cleaned, editor reopens review ... and files it without a hitch. The reviews team's directories needed a little housecleaning, and for the moment all is quiet on the macro front. But be warned: You could be next on the hit list

This week's Loose Cables contributors were Joel Scambray and Renée Gotcher, Send your war stories to loose cables@infoworld.com.



COMMERCE

visit the Focus on I-Commerce section on InfoWorld Electric at http://www .infoworld.com.

ANNOUNCED

CITIBANK has signed AT&T to a \$750 million, five-year network outsourcing deal that is expected to save the bank about \$250 million in operating costs. It will be the largest single-vendor network outsourcing agreement in the financial industry, officials said. The bank's current 11 networks operating in 98 countries will be migrated to one global data network platform managed from AT&T Solutions' Global Client Support Center in Durham, N.C. Citibank: http://www.citibank.com.

WEBLOGIC and NETWORK COMPUTING DEVICES (NCD)

have signed deals with Intel, which also has invested in both companies, Financial details of the WebLogic contract were not disclosed. NCD officials said Intel has bought 750,000 shares of NCD common stock or 4.4 percent of the company's equity. The cost of the transaction was not provided.WebLogic will work with Intel to boost performance of WebLogic's Tengah Java application server, which will run on the chip giant's forthcoming IA-64 line. The line's first chip, code-name Merced, is scheduled for production in 1999, and WebLogic joins a growing list of companies committed to using the microprocessor. Intel and NCD will work on thin-client desktop machines for the next three years, developing a reference platform design" that runs on Pentium microprocessors. Intel will provide the Pentium chips, logic components and related software and NCD will design, manufacture, and market thinclient systems and operating software. WebLogic Inc.: http://www.weblogic.com. **Network Computing Devices** Inc.: http://www.ncd.com.

TALK BACK

To contact Internet & I-Commerce section writers send e-mail to firstname lastname@infoworld.com.

lavaOne conference

HotSpot JVM to speed up Java

By Niall McKay

THE RACE TO MAKE lava run as fast as other programming languages will soon get under way as Sun Microsystems introduces Hot-Spot Java Virtual Machine (JVM) and dynamic compilation technology at JavaOne, its annual user conference in San Francisco later this month

Also at the show, Tower Technology, Instatiations, IBM, and Symantec will demonstrate how speed can be improved by putting more power under the hood with their IVMs.

Others, such as component veteran the KL Group, believe that finetuning is what is needed, and the company will be showing its JProbe lava profiling tool at the show.

"What you see happening with Java is just what happened with the microprocessor industry in the past," said Jim Mitchell, vice president of architecture and technology at Sun's JavaSoft division. "Everybody will have their solution and everybody will be competing to make Java faster"

Java's "write once, run everywhere" proposition is achieved by inserting a software layer or JVM between the processor and the software. The IVM then interprets the application code for the hardware. This means the JVM will be different for each operating system.

HotSpot has several key features that will help make Java as fast as more-established languages such as C++, officials said. For instance, it employs an technique called Adaptive Optimization, which analyzes each Java program as it runs, and uses this information to opti-

mize the critical areas or "hot spots." It also introduces a new method of garbage collection called Train. designed to remove software objects from a Java environment.

Although most garbage collection algorithms are based on the Bone Collector, Train is more effective because it is interruptible. officials said. So, when the JVM is busy it will not waste time with housecleaning. But for the present, HotSpot runs

best on a videocassette recorder. because none of the lava licensees polled by InfoWorld have yet seen any code but all have received a 12hour video about the technology.

Moreover, the politics surrounding HotSpot is shrouded in controversy. The technology is due to be divided in two - the IVM and the compiler - according to Gina Centoni, platform manager for Java.

"We believe that the compiler has added value, so we are going to charge licensees separately for that," said Centoni. However, some licensees have asked, if JavaSoft is not in the business of making lava faster. then what is its purpose?

Meanwhile, the compilation team of ParcPlace's Digitalk has founded a Java start-up called Instantiations. The company's love product does whole program optimization. Jove is a "static" or native compilation technology - once you run Java code through it will run directly on the microprocessor, skipping the interpretation step, and so run faster than IVM code.

Iove also features multithreaded generational garbage collection that some observers believe is faster than standard garbage collection. Similarly, Tower Technology's

Towerl native compiler creates a native executable that runs directly on the OS. This improves performance, said Madison Clourtier, vice president of marketing at Tower. TowerI takes the whole system and make adjustments to make the system run faster, rather than improve performance on a classby-class basis. Meanwhile, IBM is torn between

further developing its High Performance Java Compiler and coughing up the extra cash for HotSpot tech-

Sun Microsystems Inc., in Mountain View, Calif., is at (408) 343-1400 or http://www.sun.com/.

Java Virtual Machine static compiler

Static campilation aften increases the speed of applications but farfeits Java's "write ance, run anywhere" principle



URLs to get Real Names

By Jeff Walsh

CENTRAAL WANTS TO change the way people navigate the Internet by using Extensible Markup Language (XML) to replace lengthy, unintelligible URLs with real names.

The company launched the Real Name System last week at Internet World in Los Angeles. The system enables companies to better control their brands on the Internet.

For example, a user wanting

THE WEB HOTLIST Web sites worth checking aut

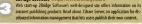
TechNet |THome http://www.microsoft.com/ITHome



Microsoft presents TechNet ITHome, a comprehensive resource for IT professionals. Get tips on developing an intranet strategy or access articles on total cost of ownership, interoperability, and help-desk management. WebLogic http://www.weblogic.com



Java-to-database integration solutions are the focus of WebLogic's site. The Tech Info section includes white papers on networking technologies and information on Tengah, WebLogic's platform for developing distributed Java applications. 2Bridge Software http://www.2bridge.com



intranet publishing products. Read about 2Share Server, an application for distributed information management that lets users publish their own content. Send your URL suggestions to jim_battey@infoworld.com.

information on a specific company could type that company name into their browser. The company, if registered with the Real Name System, can steer people to a specific page on the site, which can be changed continually by updating the Real Names XML object on their server. Companies can register their

names and marketing slogans for a \$40 annual fee. Unlike the firstcome, first-serve approach taken in allocating domain names, the Real Names System has an advisory board to resolve disputes.

Centraal also is embracing a distributed revenue model, so people would not view the company as a monopoly, and it will announce third-party registrars that will be able to license "real names." The registrars will be announced after the beta period ends. To register a keyword or phrase,

customers can visit the Centraal beta site at http://beta.centraal .com. The service will be available at http://www.realnames.com. Centraal Corp., in Palo Alto, Calif., can be reached at http://www.cen traal.com.

Java component developers organize

By Niall McKay

A NEW INDUSTRY association for developers of Java components will be launched at the JavaOne trade

show later this month. The Java Component 100 (IC100) Association's charter is to provide a single point of debeat velopment, distribution, support, marketing, and sales for developers of

JavaBeans, servlets, and applets. The association's Web site will act as a Bean Mart, or central listing source for the Java components and services available from its members. Later, the association will enable members and customers to carry out Internet commerce via the site.

Although the JC100 is the first all-purpose JavaBean organization, the idea is not new. Companies such as Sun Microsystems and specialist publications such as Java-World have also toyed

with the idea. The vertical market segment contains the Java Financial Objects Exchange (http://www.jfox.com), which serves the financial community, and the Java Telecom Object NEtwork (http://www.jtone.com), which serves the telecommunications industry.

To begin with, the emphasis will be on building a development and support network," said Roger Bell, chairman and founder of the IC100, in Orem, Utah, "As component developers, what we have found is that we need to work together to ensure that our products interoperate and plug together like Lego [blocks]."

The IC100 will seek to eliminate one of the greatest dangers of component development, according to Bell — that some components do

not work well together. Therefore, the association will introduce testing, verification, certification, and code-optimization

Although the JC100 will sustain the 100% Pure Java initiative, what needs to be avoided is peddling the political agendas of the large soft-

ware vendors, according to Bell. "We're not excluding large software vendors" Rell said "But this is for the smaller ISVs so that they can

add real value to the market." The organization will not only target Beans and applet developers, but will also focus on Enterprise Java Beans (EIB) developers, EIB systems integrators, Java Integrated Development Environments vendors, and Java Compiler vendors.

Analysts encouraged the formation of a source of the hundreds of lava components that are currently

"This is a good move, because there are going to be thousands of components on the market over the next few years," said Anne Thomas, editor and chief of Distributed Computing Monitor at the Patricia Sevbold Group, a consultancy in

The IC100 Association will be launched at InfoWorld's Java Buddy Party at JavaOne.

Members of the JC100 include Activerse, Athena Design, Caldera, Corda Technologies, Digital Harbor, EnterpriseSoft, Ice, NetAccent, Novell, Seven Mountains, Sun. Theta Group, and WebMan Tech-

Java Component 100 Association, in Orem, Utah, is at (801) 224-1492 or http://www.jc100.org.

Component model for millennium debuts

THE AGE OF BUILDING software applications like Lego structures is just around the corner as Sun Microsystems gears up to announce its Enterprise Java Beans (EJB) specification next week and Microsoft ramps up its sales of the Microsoft Transaction Server (MTS).

These two architectures will enable ISVs and corporate IT departments to build applications from reusable software components.

However, analysts warn that ISVs will have to be cautious about which component model they choose.

"The component decision is the most important decision in 1998 for development organizations," said Eric Brown, an analyst at Forrester Research, a market research company in Cambridge, Mass. "It's a question of what the strategic platform will be for developing new business applications." 1SVs are ready to make those de-

cisions, building applications with these new programming models. One such company is Moai Technologies, a sales inventory management software vendor in San Francisco. Both the company and its product will be launched this week.

Moai, like expenses-tracking vendor Extensity and help-desk automation vendor Ariba Technologies, is currently providing Java servlets, on top of the Tengah Web application server from WebLogic, in San Francisco.

However, all companies will support Sun's EJB specification as soon as it is practical to do so.

"When we started building Moai, the EJB specification had only just been announced, so it was not practical for our purposes," said Deva Hazerika, Moai's chief technology officer and founder.

Similarly, Omni Healthcare, an HMO based in Stockton, Calif., is building its health-care information system using MTS. "We are building quite complex

workflow applications using all prebuilt components," said Keith Harvey, an Omni consultant, "Reducing

Week ending March 6

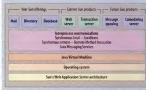
the amount of code that needs to be written really increases your production time Meanwhile, Microsoft points out

that its MTS product has been on the market for six years and is currently deployed in corporations where EIB has not even reached the specification stage.

"MTS is about making it easier to create server-side components," said Joe Moloney, Microsoft's director of ActiveX and Component Object Model technology.

"But the big issue is that we have been shipping MTS for quite some time, [whereas] our competitors

JavaSoft's middleware architecture



are still only talking about releasing their products," Moloney

Sun Microsystems Inc., in Moun-

tain View, Calif., can be reached at http://www.sun.com. Microsoft Corp., in Redmond, Wash., can be reached at http://microsoft.com.

UPS launches secure document delivery via Net

By Rebecca Sykes

UNITED PARCEL SERVICE (UPS) of America has brought its package delivery capabilities to the Internet with the launch of an electronic document delivery service called UPS Document Exchange. "It's the first delivery service that

UPS has offered that didn't require a motor vehicle," said Mark Rhoney. marketing vice president of electronic commerce at UPS. UPS, which derives 15 percent of

its revenue from outside the United States, joined with two companies to offer two different delivery services: UPS OnLine Dossier for maximum security and UPS On-Line Courier for less time-critical private documents.

In partnership with NetDox, UPS OnLine Dossier uses double encryption and digital certificates to provide secure transmission for documents, according to Rhoney.

Both the sender and the receiver

need the software, a public and private key pair, and digital certificate on their PCs. The service provides document delivery confirmation. tracking, and user insurance. "If the file is altered, it is de-

stroved and the sender is notified." Rhoney said. UPS worked with Tumbleweed

Software on its second offering, UPS OnLine Courier, which lets users send documents from their browser to anyone with e-mail. Unlike UPS On Line Dossier, On Line Courier package recipients do not need to have UPS software on their machine to receive the electronic package, according to Rhoney. But OnLine Courier is not devoid of security: Users can opt for password protection and encryption, and the service also offers tracking and receipt confirmation, Rhoney said.

Rhoney said the project, after years of planning, would go live late in the second quarter of this year. The billing structure is still being finalized. It will be on a per-transaction basis proportional to the file size, and sending documents electronically will cost less than sending them by mail.

Initially, the service and billing will be offered in English, but UPS plans to add billing in most European languages by year's end, with additional languages to follow in 1999, according to Rhoney.

Rhoney called the project "a dramatic expansion of UPS' core business "Any package that can be con-

verted into a digital file ... you will now be able to move through UPS document exchange," Rhoney said. United Parcel Service of America, in Atlanta, is at (404)828-6000 or

http://www.ups.com. Rebecca Sykes is a Boston correan InfoWorld affiliate.

KEYNOTEBUSINESS40 22.21 Internet Performance Index Top S sites HDC 100 AltaVista 10.0 Fidelity. 2/13 2/20 2/27

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Microsoft takes its partners

■ Pairings to enhance document management

By Dana Gardner

MICROSORT IS WORKING with third-party vendors to bolster Windows NT, the SOL Server database, and Exchange Server as foundations for future knowledge-management solutions, company officials said last week.

FileNet, a former Unix-based documentmanagement vendor that recently delivered its Panagon line on Windows NT, will deliver integrated server products later this year that will leverage NT 5.0 Server and SOL 7.0 when they arrive in late 1998 or early 1999, according to Lee Roberts, president and chief operating officer of FileNet.

"FileNet will be a great flagship application for SOL 7," said Charles Stevens, Microsoft vice president for the newly formed application developers customer unit. Microsoft hopes to show that SOI. Server 7.0 is highly scalable for both structured and nonstructured data, he added.

Furthermore, FileNet will integrate with Exchange Server so that the messaging and groupware platform becomes a "locus for documents used for collaborative computing," Roberts said.

Exchange will work with FileNet products so that multimedia content can be accessed via the document-management repository and be "richly stored and searched" using groups of Exchange servers on NT across an enterprise, according to Microsoft's Stevens.

FileNet cozies up to Microsoft Partnership is a win for FileNet

Increases Seattle-based engineers from 70 to 350 Gains support for sales, service, and marketing Integrates Panagon servers with SOL 7.0 and

Windows NT S O

Jointly secruits knowledge-management partners In addition to FileNet, Microsoft is teaming with other yendors. For example, Work-Flow for NT 3.2 from Eastman Software will be integrated into the next-generation Ex-

change Server to add workflow capabilities via the Outlook client "It will be structured or unstructured data. with workflow wrapped around that," said Roberts regarding the Microsoft, FileNet. and Eastman amalgamation.

"The goal is to accelerate this [documentmanagement | category and reach more customers," Roberts said, "We see I the work with Microsoft platforms as integrated document management, which is a foundation for knowledge management ... and is a key category for client/server and intranets."

Microsoft Corp., in Redmond, Wash., is at http://www.microsoft.com. FileNet Corp., in Costa Mesa, Calif., is at http://www.file net.com.Eastman Software Inc., in Billerica. Mass., is at http://www.eastmansoftware

Web site analysis software

Accrue keeps a keen eye on Web sites

ACCRUE SOFTWARE is helping businesses assess the effectiveness of their Web sites with its advanced Web reporting and analysis tool. Accrue Insight 2.0 enables businesses to gauge the effectiveness of their experience by establishing goals for their Web sites, whether



ACCRUE INSIGHT tracks user activity on a Web site, and can also break the data into new, repeat, and registered users.

that goal is that customers click the "Purchase"button or that they visit specific pages. High-end sites such as Sun Microsystems. Apple Computer, the San Jose Mercury News, Motorola, and Kodak have been using Accrue's software to refine their Web sites.

The software tracks how users arrive at a site, whether via links on Web pages or through online advertising, which lets a company track the effectiveness of its online advertising campaigns. This information also lets a company assess its most valued referring sites.

Accrue Insight also tracks the path a user takes through a Web site, and not just the number of hits per page throughout the site, which enables a company to reorganize their site if certain areas are not getting a considerable amount of traffic. Additionally, the software sits between the

user and the Web server collecting data on system response times, which can help Webmasters and IT departments do capacity planning. For content-rich sites such as online newspapers and magazines, the software can be used to see which stories are the most widely

read to assist with editorial planning. The software requires Java-enabled Web browsers to view its customized reports. The data warehouse can be stored on either Sun Solaris or Silicon Graphics' Irix, The Data collector, which monitors the Web server performance, currently runs on Sun Solaris and SGI Irix, but will expand to include Windows NT and a FreeBSD version next quarter.

Pricing for the system starts at \$10,000, with a typical enterprise configuration costing anywhere from \$60,000 to \$100,000. Consulting services are available.

Accrue Software Inc., in Sunnyvale, Calif., can be reached at http://www.accrue.com.

CERTICOM PRODUCTS LFT DESIGNERS ADD FCC TO PLATFORMS

CERTICOM HAS ANNOUNCED Its Certicom Secure line of Elliptic Curve Cryptography (ECC) products to allow software and hardware designers the ability to add ECC to their

The Certicom Secure line consists of four

products, including: Security Builder 2.0, a software develop-

ment kit for adding Elliptic Curve Cryptography to software applications: cryptographic plug-ins for standard frame-

works from Intel/Open Group and Microsoft and eventual plug-in support for lava and Public Key Cryptography Standard-11; ■ embedded systems for small device proces-

· Certicom's integrated circuit design for embedding ECC in silicon chips.

"We are working with companies who want to build specific chips to do elliptic curve cryptography," said Rick Dalmazzi.executive vice president of sales and marketing at Certicom

Enhancements to the latest version of Security Builder include support for all flavors of elliptic curve cryptography, a modular design to allow designers to add only the aspects they require, a version of lesser strength that can be exported, and general performance improvements.

Certicom is providing Elliptic Curve Cryptography technology to Motorola, VeriFone, Diebold, Pitney Bowes, 3Com and other creators of platforms that have a need for security but that also have a restrained processing capability due to hardware constraints, wireless applications requiring low bandwidth, memory limitations, or battery life, such as 3Com's Palm Pilot. The algorithm associated with Elliptic Curve Cryptography requires less processing power than systems provided by Certicom competitors, according to Dal-

"Our exclusive advantage is in constrained resource environments," Dalmazzi said. "In some cases it's the only public key cryptography that can be used."

Each part of the Certicom Secure line of products will be available in the next three months; however, the Java supported cryptographic plug-in will be released later this year.

Security Builder supports Windows 95, Windows NT, Sun Solaris 2.5, Windows CE, AIX, HP-UX, and Macintosh. Additionally, it can be ported to any platform using an ANSI C compiler.

Pricing for all aspects for the Certicom Secure line of products is determined on an OEM basis with royalties not to exceed \$1 per

Certicom also uses its cryptographic technology to develop and market fax security products.

Certicom Corp., in San Mateo, Calif., can be reached at http://www.certicom.com.



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Inside the Firewall, by Dave Taylor

DESPERATELY SEEKING ...

If you're searching for a Web designer to help you build your intranet or public Web site, turn to the Ultimate Web Design List, at http://www webdesignlist.com. This free site boasts a "showcase" of Web design companies - an online gallery of sorts where you can browse a list of design companies and see the work they've done. There is also a Yellow Pages and a Resume Bank where you can look up individual Web designers. There are not many design companies listed yet, but it's a convenient place

to start your search for a UNTANGLING THE WEB

designer.

Columnist Dave Taylor talks about an innovative new Web search service, Alexa, More than a simple search engine. Alexa actually archives the Internet, so you can retrieve old Web pages even after they've disappeared from their servers. It has other features that may appeal to intranet developers, too. Turn to page 48B for more.

I-COMMERCE



HOW WE REVIEW

Intranet World reviews examine new products, focusing on their usability, features, and sultability to task. Our expert reviewers rate shipping products on a scale of cold to hot. The authors do not employ the extensive analyses used in Comparisons, so their conclusions may be different.

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INTRANET WORLD

The Internet in the Enterprise

► Web development tool

Build-IT gains greater manageability

By Maggie Biggs

OORDINATING the design, development, and deployment of the many components that make up a large or complex Web site can be a real pain in the neck. Wallop Software's Build-IT 2.6 offers pain relief for those who need to better manage largescale Web efforts.

Build-IT continues to provide a workbench approach that enables Web development teams to create. manipulate, assemble, and deploy the components that comprise a Web application. It does a great job of managing application components - whether the site is new or already exists.

Build-IT 2.6 is not itself an au-

thoring tool, but more of an application "assembly" environment as described by the company.

The product enables content creators and developers to integrate familiar tools, such as HTML or image editors, into the Build-IT workbench. One of Build-IT's strengths is the capability to offer accessibility to external tools via the provided menu options.

Build-IT can now integrate with Netscape's Application Server (formerly known as Kiva's Enterprise Server) and Wallop also plans to integrate Build-IT with Oracle's

Application Server 4.0. I tried using Build-IT 2.6 with Netscape's Application Server to enhance a camping gear sales Web site I had created, as well as to build a new Web application to look up customer records. To work on both applications, I launched Netscape Application Builder's (formerly

Kiva Development Studio's) Software Assistants from within Build-IT, which worked great. My applications contained several different types of components:

HTML, JavaScript, GJE and more. Build-IT really helped me to stay organized because its relationshipmanagement features let me see how the components fit together. In this release, Wallop has also

added support for relationship management of Java and C++ components, so I added functionality to my applications via these types of components without incident. Also, Wallop has added support for managing dynamically generated content, too.

A real strong point in the Build-IT product is its built-in version control support. However, the product can also integrate with third-party version control tools, such as InterSolv's PVCS or Microsoft's Visual SourceSafe.

I especially liked the graphical marks that showed version changes and component status. A glance at the Build-IT workbench told me which components were checked in and out (using check marks) as well as which portions of the project were completed, in progress, or waiting for approval (via colored status bar marks).

Build-IT 2.6 Large Web development teams building complex sites will appreciate Build-IT's

THE BOTTOM LINE

project-management capabilities, which help keep everyone on the same page. This version of the product adds tight integration with Netscape's Application Server, enhanced scalability features, and improvements in team development and component support.

- Pros: Integrated access to Netscape's Application Builder development took: capability to manage lava and C++ component relationships; management of dynamically generated content; partitioning of large Web sites; improved importing and deployment.
- " Cons: None noted.
- Wallop Software Inc., Foster City. (off): (888) 292-5567 (tol)-free); fax: (650) 524-2522-info@wallog.com: http://www.walloc.com.
- = Price: Enterprise edition: \$2,495; Business User edition: \$495 per user.
- = Platforms: Windows 95, Windows NT.

As in previous versions, Build-IT's graphical interface provides three useful views: components, relations, and deployment. Together, these three views help manage projects with a large number of components. For example, when I was ready to deploy my applications, the deployment view let me organize components into the structure that would be stored on my Web server This version of Build-IT also

contains enhancements that are ideal for larger sites. For example, new support for partitioning larger Web sites into multiple applications during the development cycle enables a much greater degree of manageability. Organizations with large or com-

plex Web applications will find Wallop's Build-IT right on target, because it offers such added value in the area of manageability. Build-IT is definitely worth looking at.

Maggie Biggs (maggie biggs@ infoworld.com) is a senior analyst at the InfoWorld Test Center.



status of your site's many components.

Internet server software suite

LDAP Directory integration drives SuiteSpot 3.5

By Eric Hall

ONTINUING THEIR push into corporate networks, Netscape Communications recently released SuiteSpot 3.5, a compilaleased Suitespor 3.3,4 companion of Netscape's Web, mail, groupware, and directory-server of-ferings. The key feature in SuiteSpot 3.5 is an increased focus on directory integration, with the various servers using Netscape's Directory Server as a common authentication and access-control repository.

This focus on a shared, consistent

directory pays handsome rewards down in a couple of key areas. to administrators in largescale environments, who can now share user and group information across a

multitude of servers. Using Netscape's Directory Server on a Windows NT Server 4.0

host, I was able to use a single repository of user accounts with Web and mail servers on multiple hosts - without having to distribute or synchronize the accounts.

However, SuiteSpot still falls

There is no unified ► Is Netscape's installation; instead, you future secure? must install each compo-See our article nent in a specific order. on page 1. Further, the access-control

> Overall, however, the product provides a strong and flexible platform for intranet services, offering cross-platform, component-based ► SUITESPOT page 48B

user to grasp.

list management tools are

still too difficult for an average end-

INTRANET WORLD

SuiteSpot

services that can be split up across different operating systems and hardware according to your needs.

Centralized directory

The cornerstone of SuiteSpot 3.5 is Netscape's Directory Server 3.0. Directory Server 3.0 is the first major implementation of a directory service to use Lightweight Directory Access Protocol 3 [LDAP], so it includes features such as international language support and real-time replication among multiple directory servers.

Another new feature that administrators will appreciate is support for online directory backups, allowing you to create copies of the directory without having to bring the server down. Further, Netscape's administration tools for their LDAP server now allow you to define LDAP attributes and schemas on-the-fly, no longer requiring you to import files and data by hand.

Although Netscape's server products are normally configured to use Netscape's own Directory Server offering, I was also able to use University of Michigan's SLAPD LDAP server on a system running Caldera's OpenLinux Standard 1.1 with little loss of functionality.

Enhanced groupware services

Also new to SuiteSpot 3.5 are updated versions of Netscape's Messaging Server, Collabra Server, and Calendar Server. The primary ben-



SUITESPOT HAS BEEN beefed up with LDAP 3 support, plus more Lightweight Directory Access Protocol attributes and schema definitions.

efit of these new versions is improved integration with Netscape's Directory Server. Each user object created in the directory can be assigned a "license" to use these other servers, and other user information (such as name, message store, permissions, etc.) is also kept in the directory. Messaging Server offers support

for SMTP, POP3, and IMAP 4.1 e-mail services, as well as enhancements that come from the directory integration, such as allowing users to locate each other by querying Netscape's Directory Server. These features worked well in my tests with Netscape's Communicator mail client, as well as with Microsoft's Outlook Express mail

New to Messaging Server 3.5 is support for server-based spam fil-

ters, allowing administrators to automatically kill messages that appear to be unsolicited junk mail. During installation, a new mail management account was created that was used to run the mail services on the NT host. Because all files (and not just the services) were owned by this account, I was unable to explore and maintain the mail

database files using the NT system

account. Changing ownership of

the service and directories to the NT system account was possible, although I experienced some management problems after making these changes. I was also unable to find a way to disable the SMTP VRFY and EXPN commands from within the con-

sole. These commands allow anyone with a Telnet client to see members of groups and mailing lists. Although it is possible to disable those commands by editing a control file, they should be disabled by default. This is a fundamental security issue that needs to be better addressed

Two other new additions to SuiteSpot are Messenger Express and Calendar Express. These server-based components provide access to users' mailboxes and cal-

endars through a Web browser. Improved Web services

Netscape's champion product, Enterprise Server, has also been updated, with Version 3.5.1 now included in the SuiteSpot offering.

A big addition to Enterprise Server is the integrated Netshare content-publishing facility. Netshare provides a virtual workspace for viewing, modifying, and publishing Web content from within a Web browser. Among the features offered by Netshare are version control, user-driven access control tools (linked to Netscape's Directory Server, of course), and the capability to check for broken links.

Solid intranet solution

All told, I found that Netscape's latest versions of their Web, mail, and directory services were more stable, robust, and usable than ever. As individual components they make a fine choice for companies looking to add Internet services for external or internal use. However, by having the entire product line available on a single, consistent release, I was able to get the main services up and running quickly.

SuiteSpot comes in two flavors: Standard and Pro. SuiteSpot StanTHE BOTTOM LINE

Netscape SuiteSpot 3.5

Netscape's SuiteSpot products are a bundied set of Internet servers. Although you can buy each server separately, getting the whole shebang in SuiteSpot gives you consistent versions and Implementations, making the integration work less of a headache.

- Pros: Excellent integration into Netscape's new Directory Server 3.0:all server products act as Lightweight Directory Access Protocol clients, allowi a single repository of user accounts; wide variety of server platforms supported. Cons: No common installation tool:
- minor weaknesses in individual products Netscape Communication Corp.,
- Mountain View, Calif.; (650) 937-2555; http://www.netscape.com
- Price: SuiteSpot Standard: \$82 per seat. SuiteSpot Pro: \$140 per seat.
- = Platforms: Windows HT. Solaris, HP-UX. other Unix platforms.

dard includes Netscape's Directory, Enterprise, Messaging, Calendar, and Collabra servers and Communicator Pro for \$82 per user. SuiteSpot Pro adds Netscape's

Certificate, Proxy, and Compass servers, as well as Mission Control Desktop, a client configuration and management tool, SuiteSpot Pro costs \$140 per user. Eric Hall is president of EHS Co., a

network technology research and testing company in San Mateo, Calif. He can be reached at ehall@ ehsco com

INSIDE THE FIREWALL DAVE TAYLOR

The next frontier of **Web navigation:** Alexa blazes a trail

NUMBER OF VEXING problems continue to plague the Web, both for intranet and Internet usage. Most of these problems don't seem to be on the radar screens of the many companies busily cashing in on the design and usage patterns of today's Net users. One such problem is the difficulty of effec-

tively searching Web resources, identifying valuable information, and accessing that information. Sure, there are a ton of search engines, and there are even full-text indexing systems for intranets, but they all take a very mechanistic, nonintuitive approach. Enter Alexa, a fabulous Web-based project

created and designed by Internet expert

Brewster Kahle. You might recognize his name, since he invented WAIS, the Wide Area Information Server - an important precursor to Web directory and indexing sites. Alexa represents the next generation of

Brewster's thinking about how people find and navigate online information, and it's a fascinating alternative to the search engines. (For columnist Brian Livingston's take on Alexa, see Window Manager, Feb. 23, page 44.)

The world's biggest library

The core of the Alexa system (named after the fabled Library of Alexandria, which in its time was the largest repository of books in the known world) is a series of snapshots of the entire Web, updated every few months. It's pretty huge: 6.000GR of information

Collecting all this data allows some very slick analysis. As a result, Brewster and his team have a level of insight into how the Web is really evolving - and how people really create and navigate sites - far beyond almost anyone else online.

Visit the Alexa site (http://www.alexa .com), and you can download the Alexa floating toolbar, nifty software that helps you navigate Web sites with one-button access to the entire Alexa archive.

Hit a "404 - page not found" error? One click and you can retrieve an archival copy of the page off the Alexa server. You can also register your rat-

ing of any site with a click or two, and you can also see how any site scored with other visitors. This does for Web sites something like what the brilliant Internet Movie Database movie rating system (http://www.imdb.com) does for movies.

Virtual breadcrumbs

In my opinion, the most interesting aspect of Alexa is a gem of a feature that doesn't get too much coverage in articles about this product. The Alexa toolbar offers you easy access to a list of the sites most commonly visited after the site you're currently viewing.

The implications of this are really astounding, particularly once you start to

massive internal network with thousands of online documents. As sophisticated users navigate through the online intranet, their paths are recorded by Alexa. Less adept users can then easily follow these virtual breadcrumbs, linking information in a way that is far more sophisticated and flexible than any simple hypertext reference. The best thing about Alexa is that the more

imagine deploying the Alexa system on a

it is used, the smarter it gets about how the individual pieces of the Internet fit together.

At this juncture, the Alexa Internet group is focused on their massive archive of public Internet sites, but they are seeking a partner to begin development of an intranet-oriented version of the server and analysis software. Drop them a note if your company would be interested in helping them create an intranetready version of Alexa: Kahle and company

can be reached at frontdesk@alexa.com. Dave Taylor is president of interface design company Intuitive Systems (http://www intuitive.com) and can be reached electronically at dave_taylor@infoworld.com.

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Methods for policing e-mail are sometimes even more criminal than spam itself

This is going to be difficult. Last week we talked about all the very valid reasons the vast majority of InfoWorld readers would like to see unsolicited commercial e-mail eliminated, and that was the easy part. This week we need to discuss why a small minority feel the cure for

spam might be worse than the

Another difficulty here is, unlike last week, I do not have a lot of articulate reader commentary to quote. In fact, after throwing out the arguments from those who are clearly in the hulk e-mail business themselves, I have only a handful of messages that make a cogent point on this side. But they all made a similar point: The writers did not feel getting rid of junk

sort of agency with real police powers and the resources to track down

e-mail was worth the possible consequences. "Spam annoys me," writes one reader. "But some of the hysteria and efforts to control it scare me. It is very easy to be against something unpopular that most of us don't like." And this is the hardest part of all, because



saving this isn't going to win me any popularity contests: To a point I agree with this reader's sentiment. We do have to think about spam options more because all

the possible solutions I've heard scare me too. It's not so much that the solutions are bad, but I don't think we understand what must accompany them if they're going to work.

The solutions that readers recommended fall into four basic categories: I) an "opt-in" system in which only those who have agreed to receive messages of a certain type get them; 2) a requirement that junk e-mail carry an identifying mark in the subject line for easy filtering or deleting; 3) an e-postage system along the lines advocated by Bob Metcalfe; or 4) passage of a law by Congress such as the Smith Amendment extending the junk fay law to a-mail These solutions might work fine if junk

e-mailers played by the rules, but they don't. Remember that the junk e-mail you get now is almost always breaking several laws. They misrepresent who they are by forging the originating address and header information, they steal services from unwary sites they use as relays, they offer sexually explicit material to people including minors who have not

requested it, and/or they offer fraudulent, illicit or nonexistent products and ser-The only way any of these solutions will work is if they are accompanied by a fundamental structural change to the

Internet, including

the creation of some

a whole host of petty criminals. Otherwise, how can you force the junk e-mailers to mail only to an "opt in" list, or to identify themselves and their message properly? The infrastructure changes that would be required for an e-postage system's security framework would in and of itself eliminate today's junk e-mailers before the first micropenny stamp was ever sold. And ask anyone who has ever had

the e-mail equivalent of the junk fax law. I'm not trying to be a naysayer here. Those who have not been reading me for years will not realize how long I have been crusading on the junk e-mail issue, or how familiar I am with the problem as it really exists from the hundreds of junk e-mails readers forward to me daily. And, as we said last week, it is a problem that threatens the value of the Internet for

their e-mail address forged on a widespread

spam how comfortable they would be with

all of us, and something does have to be done. But it's going to be awfully difficult to throw out the dirty bath water that is spam without tossing the Internet baby on a bouncing, bruising ride. Maybe it's inevitable that some infrastructure changes that curtail some desired freedoms will be made. But before we rush into any solutions, let's make sure we understand both the nature of the beast that we are trying to destroy and the nature of the beast we will be creating to kill it for us.

Ed Foster has been writing about technology and consumer issues for nearly 20 years. Send him gripes about computer companies

and products at gripe@infoworld .com, or visit his Gripe Vine Forum on InfoWorld Electric (http://www .infoworld.com).

TO THE EDITOR

BOB METCALFE ran a column on a cable modem service company called Road Runner. This week we hear from some Road Runner customers about how the company only supports Internet Explorer, Nicholas Petrelev recently asked for predictions about the computer world's future. One reader gives his thoughts about Windows NT's future.

Been-been!

BOB METCALFE recently wrote, "However, amid all of this freedom of choice among competing alternatives, there's Internet Explorer. If you use any "proprietary" browser, a browser other than Microsoft's Road Runner says it cannot support you. The Department of Justice should dig into the negotiations leading to this exclusionary deal." [See From the Ether, Feb. 23, page 115.1 But what does this "nonsupport" mean?

When the Road Runner man came to set up the service on my computer and Road Runner started downloading Internet Explorer, I just said, "I don't want that." He said no problem and stopped the download. Then he showed me a menu choice on the log-in dialog box where you can set your browser. Even so - this just controls what browser starts up automatically when Road Runner starts. You can, of course, use any browser you want.

I've needed technical support several times all having to do with getting a connection. Which browser I use has never been an issue. So while I agree with Metcalfe's thrust about Microsoft exclusionary deals, my experience with Road Runner does not suggest that it is an important issue in this case.

Peaks Island, Maine arthur@ime.net

I JUST FINISHED reading Bob Metcalfe's article in InfoWorld about Road Runner Internet access. As a current Road Runner customer, who has been using the service from the first day it was offered, I can agree that the service is excellent. I must say though, that I am disappointed

about Metcalfe's last paragraph about Microsoft's deal with Road Runner to only support Internet Explorer 4.0. l, like many people, am sick and tired of the Internet Explorer story being dragged on and on by the media. Although Microsoft has done some questionable acts in the past, Internet Explorer 4.0 is not what people should be worried about.

First of all, anyone can remove Internet Explorer from his or her system, even if it comes shipped with it. Second, anyone can add Netscape to their system, even if Internet Explorer 4.0 is on it. And third, many applications being shipped today require Internet Explorer's user interface to function, so most people will install it eventually, even if they

never load the famous "Internet Icon." That said, although Road Runner does not support any proprietary browsers, the company does provide detailed directions for configuring Internet Explorer, Netscape, and any other browser that supports a proxy server. In addition, it provides detailed directions for setting up any POP client, Road Runner's statement that it will not support any other browser simply means it does not provide detailed technical support for any browser it does not provide. How is this different from America Online, which only sup-

ports its browser, or most local Internet Service Providers that only offer one browser?

To dispel the "support" claim even further. when the service technician from Road Runner installed my system, he offered to configure either Netscape or Internet Explorer. It was my choice, not his, Currently, I use both Internet Explorer and Netscape, Outlook 98, Eudora Pro, Teleport Pro, and a bulk news grabber. I have never had any configuration problems.

From my standpoint as a consumer, I have found very few companies that have provided support for so many unsupported John Lazarchic

Columbus, Ohio ilazarch@columbus.rr.com

Software Peace Prize INTEL IS NOT GOING to make any differ-

ence, in my opinion, [See From the News Desk, March 2, page 3.] What products do they have? In this industry, talk is cheap; if you want to set standards you simply need to make affordable products. CORBA hasn't taken over yet because of the high price of CORRA tools Mark Lehrer

mark@hdplus.com

SHAREWARE IS NOT FREE SOFTWARE, IT IS JUST A TRY-BEFORE-YOU-BUY SYSTEM. THE FACT THAT SHAREWARE IS FRE-QUENTLY CONFUSED WITH FREE SOFTWARE IS THE MAJOR PROBLEM WITH THE SHAREWARE

SYSTEM.

A. Lloyd Flanagan

WHAT DOES INTEL know about distributed object architecture? We already have three distributed object architecture clans, at various stages of maturity. OMG is by far the most mature - almost 9 years old, with 850 members and over 500 organizations that have gone public on their CORBA/HOP adoption. The Sun/Java/RMI clan is the second one of note. They are moving to embrace CORBA/HOP. And that leaves Microsoft with DCOM - with five reference sites detailed on Microsoft's Web site. I really can't see a fourth clan from an object baby pros-

Where is the evidence that this clan warfare is slowing up distributed objects? Eric Leach

Eric_Leach@compuserve.com

Freeware vs. shareware IN AN OTHERWISE excellent article, Torsten

Busse makes a common error by referring to the Linux operating system as shareware. [See "Netscape posts free code to Web," March 2, page 75.1

Linux is actually freeware. You may use it indefinitely without paying anyone, and it is developed as an ongoing effort by volunteer programmers. You may pay someone to put the OS on a CD for you and you may pay for application software to run on it. However, the OS itself is free.

Shareware is not free software. It is just a trv-before-vou-buy system. The fact that shareware is frequently confused with free software is the major problem with the shareware system. In fact, long-term use of shareware without payment is a form of software piracy.

A. Lloyd Flanagan Richmond, Va. lloyd.flanagan@capitalone.com

Predictions

NICHOLAS PETRELEY wants predictions? [See Down to the Wire, March 2, page 124.] I think that NT 5.0 is going to have difficulty because it is already bloated. Bill Gates is trying to do a noble thing - he is trying to make computing easier by putting features into the OS. The only mistake that he is making that I think will eventually cause the fall of NT is that he is building on a poor OS kernel, NT has a problem with handling interrupts, and can rack up some serious context switching times as a result.

Some may wink at this and say it isn't such a big deal. However, the most frugal people would say, "Cents add up to dollars." Because NT's low-level foundation is

weak, it will continue to cause problems for all applications built on it. There was a period when managers listened more to Microsoft than to their own people because of the things Microsoft offered in its OS. I think that the technical folks are going to be saying, "I told you so" more and more. Linux, QNX, and other OSes that are stable and well designed will be having more and more of an influence on the future. Kevin Stallard

Grand Junction, Colo. kevin_stallard@bio-rad.com

Where are the trainers? READ ALMOST ALL the trade magazines

and they all talk about a shortage of skilled people and the need to train them. [See "Labor pains," Feb. 23, page 1.]

Where are these companies that are willing to train? I've been looking for such a company for a year now. My company won't pay for training. I've been in data processing all my adult life and want to upgrade my skills or slide over to a new area, but everyone wants skilled people, not people willing Dave Roman

romand@cesmtp.ccf.org

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FROM THE EDITOR IN CHIEF - SANDY REED

InfoWorld Reviews Board is part of our long tradition of covering new products

roduct reviews are one of the most important pieces of InfoWorld's rich editorial heritage. Each week, we review 15 to 20 products - that's twice the number

from any other weekly IT publication. Most of these reviews are written by staff

analysts, such as senior analysts Maggie Biggs and Jeff Symoens. But our 15 Reviews and Test Center Comparisons analysts cannot



technology waterfront completely. That's where the InfoWorld Review Board comes in. It has been in existence nearly as long as Info-World has, and is one of

cover the ever-changing

the factors that make our reviews so valuable. In addition to enabling us to review more products, the review board helps us to review products in categories in which we don't have staff expertise. We choose outside reviewers with the same care that we choose staff members. We look for people with real-world IT and/or consulting experience, high standards, and excellent analytical abilities. At the end of all reviews, you will find information about the author's particular skills.

Our reviews appear in five places: 1) the main Product Reviews section, which is delivered to all 350,000 InfoWorld subscribers (see page 89); 2) Enterprise Networking Product Reviews; and 3) Intranet World, both of which are delivered to a subset of readers intensely interested in those topics; 4) on InfolVorld Electric (http://www.infoworld .com) only; and 5) the Focus on I-Commerce section, which appears monthly in print and is updated weekly on InfoWorld Electric.

Reviews Editor Dan Sommer heads the overall team. If you are interested in being considered for the InfoWorld Review Board, send your qualifications to Deputy Reviews Editor Sarah Varney at sarah varney@ infoworld.com.

Editor in Chief Sandy Reed has been following the high-tech industry as a journalist for nearly 15 years. Send comments to sandy_reed@infoworld.com.

INFOCRYPTION

This week we've taken a quote

from an innovator in the programming world and

"encrypted" it using a simple substitution cipher where each

letter of the alphabet has been replaced by another.

Short words, punctuation marks. character frequency, and plain-old luck should help you unlock the meaning in the message.

OD AIF UIX'L RXIG GBVL AIFQ

COITOVY OZ ZFCCIZWU LI UI. AIF'U

MWLLWQ XIL ZLVQL GQOLOXT OL.

In addition, here's a hint: In this week's InfoCryption

- WUZTVQ UOHRZLQV

Answer can be found on InfoWorld Electric at http://www .infoworld.com/printlinks.



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The IT Manager

Who I am.

Visionary.

Agent of change.

Engineer.

Teacher.

Troubleshooter.

Just your everyday kind of hero.

I put out fires.

I rescue data.

I increase productivity.

I plan capital investment.

I guide colleagues through
the technological wilderness.

I keep my network
up and running,
which keeps my
company on its feet.



What I want.

I want from my vendors what my people need from me. Rock-solid reliability Expert, caring support. Custom-fit technology. Incredible high-value, long-term solutions. But most of all, I need my vendors to do things my way.

Isn't it great when you can meet your wants and needs at the same time?

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 Processor-Based PCs
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- Mgmt. 1.1 compliance)

 Prices Starting at \$999
 Including Monitor

NS-8000

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Network security auditing

The key to network security

If the thought of nameless, faceless hackers roaming your network sends chills down your spine, then it's time to act. A network security audit is the best way to find out how secure - or insecure — your network really is.

► Continued from page 1 where the vulnerabilities are, how severe they are, and what needs to be done to fix them. It may sound like sacrilege, but there really are security holes that do not need to be fixed or, at least, can be prioritized as a small risk, which would take an inordinate amount of work to overcome. Putting things in perspective is almost as much work as the audit itself.

One key to understanding the relative importance of any given security flaw is to ask yourself, "Is this the only way, or the most vulnerable way, this breach could occur?" After all, if someone is so intent on stealing your data that they're likely to "brute force" a password, aren't they just as likely to dress like a janitor and rifle through your filing cabinets at night?

GETTING MORE SLEEP AT NIGHT. As hard as it might be to swallow, the first step to securing your company's information systems is admitting that the job will never be finished. If history has taught us anything, it is that the human mind can, and will, find a way into any box, no matter how tightly sealed. The quicker you come to grips with this reality, the more sleep you will likely get at night.

That said, there are things you can do to ensure that your network is as secure as possible, given the constraints of time and the manpower shortages every IT shop faces. A security audit is a great place to start, and based on its results you may decide to invest further resources in actually upgrading security - but at least you'll know where you stand today

Until recently, the tools available to help secure a network required an in-depth understanding of everything from TCP/IP to a Unix kernel's treatment of user rights. On top of that, the tools themselves were almost universally immature and ornery. Just getting them to work required some pretty serious Unix expertise - as if the only dentist in town worked in an unmarked building, had no phone listing, and only gave diagnoses in Latin.

AN EVERYDAY TASK. Because of that, security has been one of those topics that everyone agreed was important, but which no one seemed willing to do much about, except in those rare situations in which a security breach could cause huge amounts of damage. Fortunately, security tools are getting friendlier, and performing a security audit is less of a black art and more of a doable, everyday IS task. In fact, it has to be an everyday task; securing a network is an ongoing process, not a one-time effort. Changes are made to the network every day. The most that any tool can give you is a snapshot in time, and for a tool to be useful you will need to make security auditing part of normal network maintenance.

In this Test Center Analysis, we set out to establish a blueprint for performing a comprehensive network security audit in addition to testing the best tools to do the job. We decided the most useful way to achieve this goal would be to carry out an actual security audit using these tools on a "typical network" in the InfoWorld Test Center. The tools tested include Enterprise Security Manager 4.4 from Axent Technologies, Internet Security Scanner 5.0 for Windows NT from Internet Security Systems, a beta version of WheelGroup's NetSonar, and finally, from the freeware sphere, Security Administrator's Tool for Auditing Networks, or Satan. To widen our market scope, we also assessed an outsourced security offering. Internetworking and Security Consulting Services, a wing of International Network Services,



ANALYSIS ISSUES Establishing an effective process for finding network security vulnerabilities

■ Determining the best tools to carry out a security audit

Enterprise Security Manager 4.4 Axent Technologie

Internetworking and Security Consulting Services International **Hetwork Services**

Internet Scanner 5.0 for Windows Internet Security Systems Inc.

NetSonar beta WheelGroup Corp.

Security Administrator's Tool for **Auditing Networks** (Satan)

THE SECURITY THREAT - REAL OR IMAGINED?

ou've been hearing for years about security as a critical issue. If you believe the stories, hordes of nefarious hackers are hammering at your virtual gate, threatening to electronically topple your empire. Despite the ai-

False sense of security?

their network's security. The only onclusion we can make is that many namigers are operating u



jeged threats, security doesn't rank very high on the list of top IT concerns. Pressing issues such as the year-2000 problem. desktop upgrades, and 32-bit migration, are pushing security out of the limelight. Why have IT departments relegated security to the wings, and will it ever receive greater attention?

One reason for inaction is that the severity of the security threat is subject to considerable debate. It's extremely difficult to accurately track criminal activity in the area of computer security because the survival of many companies hinges on the perception that their data is secure. The 1998 joint survey by the FBI and Computer Security Institute (CSI) found that only 17 percent of hacking victims contacted authorities. According to the FBI/CSI study. 72 percent of companies have at some stane suffered losses due to security breaches; of those companies, 46 percent reported total losses of \$136,822,000.

in contrast, a study carried out by Info-World during the preparation of this Analysis pegs the damage more at the loosechange level. We surveyed 98 InfoWorld readers about security at their companies. Most of them rated their confidence as high, yet almost 40 percent of respondents had never carried out an analysis of the state of their network's security. The few who had suffered break-ins characterized them as minor. With such conflicting evidence, it becomes difficult to tell whether the security threat is indeed minor or whether the instance of security breaches

Choose your weapons

in our InfoWorld security survey we also asked our readers about the security tools they use. Utilization of these tools is surprisingly low in light of the fact that 95.9 percent of those surveyed have Internet access **. their networks.

What type of security tools do you use?



is being under-reported.

Amidst all of this confusion, security product vendors try to sell their wares using the scariest numbers they can possibly find, It probably suits many IT managers to assume these numbers are not appilcable to their particular situation, as they continue to focus on more "pressing Issues." The managers that do look hard at the security problem are faced with an univ reality. There are a lot more holes than can be realistically plugged, and if your network has never been breached it can be hard to justify the time and monev spent on security-related work, in the end, it seems that the hardest thing to justify is the investment of precious iT doilars when your company may be gaining little more than peace of mind.

The recent flurry of acquisitions and mergers in this market space may well provide IT managers with the key to justifying those security concerns, Cisco Systems' acquisition of auditing and intrusion-detection vendor WheelGroup is due to be completed any day now, Network Associates recently announced plans to acquire security vendor Trusted Information Systems. and Axent Technologies merged with Raptor Systems in early February. The fact that major vendors are jostling for position in the security market should quarantee greater mind share for security problems. and it all adds up to one thing - security as an IT issue will only get bigger. - Seon Dugon

Conclusions

up of various hosts, including Windows, Unix, and Novell platforms, here is no question that the as well as other critical pieces of network infrastructure - a WAN tools we tested do a router, a remote-access server, and a firewall, all of which run TCP/IP.

When possible we make specific recommendations, but as many of the things we discovered may not be applicable to every network, our main intention is to be informative about the general steps that should be taken to secure your network. (See "Security audit resource guide." page 60, and "Security audit checklist," page 62.) By our journey's end, you should have an adequate battle plan for conquering your network security demons and a snappy answer when you get that memo from your CEO asking how secure the enterprise network really is.

came to our test lab to perform its own security audit. (See "Out-

sourcing your security problems," page 62). Our test network is made

Test Center Analysis contents

- 56 The ins and outs of a network security audit: We toke you through our security oudit and make recommendations for the best practices.
- 56 Hack your network and man-
- agement will come 57 How secure are your IBM
- legacy systems? 58 Security hotspots to watch for. We look at some of the security flows found on our test network during our oudit.
- 60 Security audit resource guide: Top into the large amount of information on computer security available on the Internet. 62 Outsourcing your security
- problems 62 Security audit checklist



The full text of our security audit resource quide

tremendous job of lessen-

ing the workload of a comprehensive security audit, as well as keeping IT staff up to date on the latest vulnerabilities in new technology. In looking at the available tools, we found there really is no magic bullet that will alert you to every possible security issue - and there probably never will be. Like any good craftsman, a savvy administrator will rely on a complete set of tools, using each one whenever it is appropriate. However, if you rely solely on these tools you will be building a false sense of security. Simply put, security auditing tools are the distillation of the combined knowledge of determined and creative hackers the world over into a "tame" package with a simple-to-use GUI, and they shouldn't be regarded as a replacement for common sense

The market leader in this space, Internet Scanner 5.0 for Windows NT from Internet

and human vigilance.

impressively detailed and comprehensive list of vulnerabilities on our test network, internet Scanner helpfully explained and referenced these vulnerabilities in appealing graphical reports. We were particularly impressed by the array of current NT denial-of-service weaknesses that Internet Scanner found. This was unmatched by any other product. However, Internet Scanner did not catch everything, which points to the necessity for additional tools when assessing the security of an enterprise network (hostbased tools in particular). Some omissions included its incapability to adequately probe our NetWare server and remoteaccess server. Internet Scanner's network-centric viewpoint limited its capacity to assess hostbased file system and configura-

Security Systems, showed us an

tion vulnerabilities, Overall, Internet Scanner is a must-have tool, and it can bring even those wholly unfamiliar with security

concepts quickly up to speed on

the state of security on their network

Axent's Enterprise Security Manager (ESM) 4.4 employs a manager/agent mechanism, as opposed to Internet Scanner's remote-probe approach, if you can get around the idea of having an additional piece of software residing on your machines, ESM will identify the host-based holes that Internet Scanner may have missed Even better it has agents for almost all flavors of Unix, VMS, NT, and NetWare (Bindery and Novell Directory Services). Axent also makes available agents for Oracle databases and AS/400, and it plans to release agents for firewalls. routers, and Web servers,

WheelGroup's recently released NetSonar scanner currently runs only on the Sun Solaris OS, but it supports a lessrestrictive licensing arrangement than Internet Scanner and has the benefit of Wheel-Group's considerable experience in IS security. We used an early

► Conclusions, page 56

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COMING UP Test Center Comparison

May 4

Natwork intrusion detection solutions A new breed of products that focus on real-time intrusion detection can help administrators to pinpoint unauthorized network intruders or security policy violators "at work" and alert them about these security breaches. In this Comparison we will test a number of approaches to network intrusion detection

CONTRIBUTORS Introduction by

Brooks Talley Test Manager

lest plan by Joel Scambray Technology Analyst

Testing by Joel Scambray

Additional testing by

Stuart McClure Enterprise Platforms Manager

Editing by John Broderick Senior Editor

VENDORS CONTACTS Enterprise Security Manager (E5M) 4.4

Axent Technologies Inc. Rockville, Md. (301) 258-5043 (800) 298-2670 http://www.axent.com Price: \$1995 for the ESM for NT manager, \$995 for the ESM agent for the NT Server, and \$395 for the ESM agent for Windows NT Client.

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ber of devices scanned. FREEWARE

Security Administrators Tool for Auditing Networks (Satan) http://www.trouble .org/satan

Conclusions (continued)

beta of NetSonar to scan our test networks and it found a number NT vulnerabilities in addition to the standard TCP/IP fare. On the downside, the beta release took noticeably longer to complete its scan of our network than the other tools and had difficulty functioning when we changed the IP address of the workstation on which it was installed.

Dan Farmer and Wietse Venema's wellknown freeware utility, Security Administrator's Tool for Auditing Networks (Satan), showed similar configuration idiosyncrasies. Satan is a handy and free TCP/IP scanning tool but it's certainly beginning to show its age compared to the new breed of auditing took that are updated on a consistent basis.

If your company doesn't have the resources or expertise to conduct your own security audit, you should consider outsourcing this task to a qualified consultant. Even if you have the necessary in-house capabilities, the wisdom and unbiased viewpoint of a consultant can provide additional benefits. Our experience with International Network Services security auditing service was eveopening even in light of our previous scans with off-the-shelf auditing tools. (See related article on page 62.)

Finally, it is important to recognize that a security audit is just one part of a continuing process to secure corporate information assets. Knowing and learning about other aspects of security is paramount.

Fortunately, there is a large amount of publicly available information on computer security, thanks mostly to a thriving community of researchers, developers, and users that generously share their knowledge and experience on the Internet. We highly recommend that IT staff at all levels tap into this flow, and in our Security audit resource guide on page 60, we provide some key launch points for a quick self-education in how to think like a security administrator.

The ins and outs of a network security audit

This will only hurt a little bit ...

ecurity audits may seem about as appealing as a visit to the dentist, but we tried to salvage some excitement from our test audit: We would be the ones doing the drilling. First, we set up two test networks to serve as our audit targets. Both networks ran only TCP/IP and were separated by a Trusted Information Systems (TIS) Gauntlet firewall running on Windows NT 4.0. One network contained 15 hosts with out-of-the-box installs of NT 4.0, Sun Solaris 2.5.1 and 2.6, and NetWare 4.11. The other comprises more than 100 hosts with mixed operating systems to test the scalability of our audit tools. We then set to work finding the soft brown spots in the shiny white enamel we had built ("say ahhhh ...").

There were three main steps to our audit: We began with the crucial initial consideration of security policy issues,

then using an assortment of tools we examined our test network from the ground up, and finally, we interpreted the reports generated by those tools.

THE FIRST STEP: PREPARATION

In our haste to get into the lab and start hammering at our test network, we broke the first rule of performing a security audit, but we learned an important lesson in the process. Before you do anything else it is critical to define the reasons for conducting an audit. Yes, this means sitting down with management and doing the nontechnical dirty work; risk analysis and (heaven forbid) drafting or re-evaluating security policy.

Our focus in this article is mainly on the process and the tools that make up a successful audit. Although risk analysis and managing a security policy are outside the scope of this article, it is important not to overlook the critical

Gocurity Rating for Modules on attack, G Security Rating

A good reporting component is crucial to a security auditing tool. Although Axent's Enterprise Security Manager provides color graphs and more specific information about vulnerabilities in its GUI, you can't print these out in the current version.

groundwork that must be laid before any shrink-wrap is torn. Any security audit should be based on a careful consideration of what risks to corporate information integrity are present, as embodied in a security policy document. The preparation phase of the audit does not have to be that painful. We found that there is a wealth of information available to assist in crafting an effective security policy, including the freely available Site Security Handbook, published as Request for Comments (RFC) 1244 and located on the InterNIC Web site at http://www.inter nic.net. (See "Security audit resource guide. page 60.) If the job of

drafting a security pol-

icy seems beyond the expertise or resources of your organization, you can always have someone do it for you. This is one of the key values brought to the table by an outside consultant. (See "Outsourcing your security problems," page 62.)

Hack your network and management will come

By Stuart McClure

etting management to understand the importance of something as neb-ulous and abstract as network security is a monumental task. Many nontechnical managers may view network security as one more abtruse piece to the computer infrastructure - another financial black hole with little chance for return on investment. As a result, security projects are often the first to get cut from the budget.

But as any good security administrator knows, there is an easy solution to getting management buy-in: Tell them a security breach has occurred. Nothing gets management more interested in security than the thought of hackers roaming their systems. But don't wait until an attack happens to get the interest you need. Show them how secure or insecure your network really is by hacking into it yourself.

Knowledge is truly your most powerful weapon in this regard. Take stock of every comer of your network. Perform regular security audits and back into your network on a regular basis. Get the latest "hack of the month" and try it out on your network (be sure to get proper authorization and pick an off-peak time to try the hacks, of course). Stay current with the new hacks and holes discussed in the bugtrag mailings, the hacker sites, and related newsgroups. (See "Security audit resource guide," page 60.) The more you learn about how hackers attack and how your networks are vulnerable (and they all are), the better equipped you are to portray the very real security risks.

To get management to take security more seriously, you'll need to discuss the importance of being prepared. Security defense is as important as disaster recovery for your systems. Cite any number of security studles that come out each year. Point to news reports about recent security breaches at other companies (and that's only the tip of the iceberg). Talk about recent studies stat-Ing that almost 80 percent of security risks are generated internally.

Intangible importance

Companies spend gobs of money on physi-

cal security every year because they are protecting something tangible that can be easily understood. It's your job to make management understand the intangible importance of security. Remind them about the thousands of dollars they shell out each year in physical security: doors, locks, card keys, security quards, and surveillance cameras, Remind them how much of your valuable information is electronic and deserving of priority over pens

and paper weights. The bottom line is that you need to quard

your network resources against the biggest and unliest holes --- not every single one. Management will compare the risks vs. their costs. Let them know you don't need a cyber-Fort Knox, you only need the resources necessary to patch your network's greatest vulnerabilities. This will prove to them that they can depend on you to suggest realistic solutions to serious problems.

Also, management understands the financial bottom line. Briefly talk about customer impression, and competitive losses as a result of a public break-in. Mention

the costs of having to send out 100,000 letters to customers explaining why their credit card numbers have been stolen. Talk about the hard dollars it would take to recover from an attack. The time and expense it would take to get a database server up after a hit is a good example. Or simply mention the lost revenues inevitable during a prolonged downtime.

Armed with all of this - knowledge of your network and its greatest vulnerabilities, understanding how a hacker attacks, and a calm, collected strategy — you can present your security risks to upper management realistically. If you are prone to Nostradamus-like predictions with tales of gloom and doom, stay away from management meetings. The consequence of exaggeration could be the breakdown of any trust that already existed with management. If you paint a realistic and honest picture of what can happen when any of these largest of holes becomes compromised, they will listen. Remember that in the end they want to protect their corporate jewels as much as you do.

How secure are your IBM legacy systems?

By Stuart McClure

BM systems are renowned for being so secure that the AS/400 has never had a virus written for it. I tend to think that the biggest reason for this is that AS/400 programmers simply don't have the time to write malicious code - they're too busy making money. All joking aside, IBM would say that the reason lies in its operating system security and there's a lot of truth in that.

Security is much more than simply protecting against virus code and no one has been more successful in developing secure systems than IBM. In fact, IBM has produced some of the most secure computing systems ever made in OS/400, MVS, and

05/390 - these operating systems provide user-level security and auditing to every file and library on the system.

Who, what, when, and how?

In the preparation phase of an audit you will also need to answer the following four questions as they relate to your network: who, what, when, and how. The "who" may seem redundant but in the case of large organizations with independent departments, it can be critical. To avoid damage to your network, not to mention your health, you need to make sure you have the proper written authorizations to conduct audits across departmental boundaries. For example, it is a good idea to get authorization before you attempt to assess the vulnerability of the finance department's SOL Server to a denial-of-service attack. As far as "what" is concerned, audits

have traditonally been dumped into the following three categories: host, network, and firewall.

"When" to audit should be spelled out in your security policy document. Some generally accepted rules of thumb for scheduled audits are hosts and networks every year, and firewalls every six months. It's also a good idea to conduct a forensic audit following a security breach as well as before bringing new systems into production.

The "how" refers to the tools you should use to carry out an effective security audit. We selected a handful of the best tools on the market to help you with this decision. In the case of public domain tools such as Satan, you must be careful to verify the integrity of the distribution you obtain. It would be a terrible thing to conduct an extensive network audit with a tool that was later called into question the results of the audit itself would be compromised. It isn't too paranoid to verify even commercial distributions with a digital signature (ISS, for example, posts MD5 checksums for all release binaries on its Web site). You should also pay close attention

to the platform from which you conduct the audit. It should not be accessi-

Integrated equals security

Integrated operating system security is the real gem of the IBM legacy operating systems. The integrated relationship between user and operating system eliminates the need for third-party security products. Systemwide security controls include password limitations such as requiring alphanu meric passwords with specific restrictions such as expiration dates. User profiles label users and control their behavior on your system. Resource access control limits a user's accessibility to libraries and files. Integrated auditing offers a detailed review of system activity including detailed user file access recording.

IBM has worked hard on security during the past two decades. The U.S. Department of Defense defines the criteria for how

ble over the network, if you want to prevent unauthorized users from wresting control of your auditing toolbox and turning it against you. The ideal audit-

Internet Security Systems' Internet Scanner had the

best reporting tool of the products at which we looked. The reports cover all levels of personnel and presentation is sharp.

ing tool should be a portable unit that can be easily disconnected from the network and physically secured, and it should be subjected to its own security audit for good measure.

THE SECOND STEP: THE AUDIT

Can we start already?

Having tamed our desires to rush into testing, and having dutifully carried out the necessary preparations, the time finally arrived to break out our tools and start digging. Well, almost. First, a word about technical vs. nontechnical auditing, and why you should do both. Part of any audit should be devoted to touring facilities and identifying normal usage patterns, privileged users, trust relationships, critical systems and their function, network topologies, and key personnel. You should also gauge fellow employee's familiarity with security policy, emergency preparedness (or lack thereof), and the accuracy of critical documentation. Yes, this means talking with people again.

rate operating systems according to their level of security from Controlled Access Protection (C2) to Verified Design (A1). IBM has consistently required their OSes to be at least C2-compliant including OS/400 for the goes beyond C2 to B1 level security. The

secure a computer system's security is. They

AS/400 and AIX for RS/6000. But the S/390 S/390's operating systems MVS and OS/390 use what is called Resource Access Control Facility (RACF) to provide the added B1 security. RACF is responsible for the advanced security functions available in MVS and OS/390 such as user identification, journaling, auditing, encryption, and public-key certificates for user IDs.

The Achilles' heel of IBM system security is TCP/IP and systems running TCP/IP are far more vulnerable to attack RACF has given IBM customers what they demand - the

The tools we tested can tell you a lot. but they won't reveal at what time finance department users typically log on in the morning or why the CEO's secretary can get root

privileges on the Engineering Department's server. Much of this information is as critical to a company's ongoing operations as how vulnerable the Web server is to a CGI phf attack. However, it is often overlooked in the haste to launch glamorous technical tools such as network scanners. Once this nontechnical audit is done, you can wipe the beads of sweat from your brow and let the technology do the

talking for a bit.

Differing architectures

Essentially, the auditing tools we tested automate the tedious, time-consuming process of manually checking system logs, file integrity, network services, and checking vulnerabilities ferreted out by the vendors' research department or organizations such as Computer Emergency Response Team Coordination Center (CERT) and U.S. Department of Energy's Computer Incident Advisory Capability (CIAC). The architecture of an auditing tool plays an important role in how effectively it will be used. The tools we tested fall into two categories: manager/agent and network scanner.

Axent Technologies' Enterprise Security Manager (ESM) is the lone representative of the manager/agent architecture. With this tool a centralized console audits individual hosts via information relayed by software agents installed on target systems. This is at once a weakness and ESM's greatest strength. At first, we were wary of installing ESM agents on our various capability to tie mainframe security with the use of TCP/IP applications. IBM's own TCP/IP applications, such as Telnet, FTP, and HTTP all use RACF. These applications use a RACF feature called the System Authorization Facility (SAF) to provide security authorization. They use the SAF to utilize the S/390's native security features.

Because midrange systems such as the AS/400 and mainframe systems such as the S/390 are so secure by themselves, and because they have the means to integrate applications into their native security paradigm, secure TCP/IP applications can be developed without the need to integrate complicated third-party products. By contrast, applications that are developed in-house do not have to use SAF, it is entirely optional, and therein lies the possibility for misuse

test machines. We couldn't help but wonder about the wisdom and legwork involved in adding another layer of managed software to the already dizzying array of virus-checkers and other utilities running on corporate desktops and servers. However, Axent plainly has done its homework in this area, and the well-organized installation guide pointed us to some elegant remote install solutions for NT, and via FTP/ Telnet for Unix. Each requires administrative privileges on the remote box, which is a potential security hole in itself. We found that the strength of the manager/agent architecture lies in the intimacy of the information it conveys about the target machines, particularly for hosts that are not completely accessible to TCP/IP probes such as our Net-Ware 4.11 test server. By contrast, the freeware utility Satan.

Internet Security Systems' Internet Scanner, and WheelGroup's NetSonar are all network scanners. Because target host installation is not required, it takes a lot less effort to get up and running with network scanners than with the manager/agent approach. Although scanners can glean a surprising amount of information about individual hosts, most of this is limited to what is accessible through remote means. The main strength of network scanners is that they can audit all hosts on a subnet without having to physically touch them.

In terms of general usability, we found that all of the tools have intuitive GUIs that require just a few clicks of the mouse to configure and launch an audit. ESM and NetSonar can run scheduled audits, but ISS and Satan lack this convenience (although you can use standard OS schedulers such as NT's AT Scheduler or Unix cron to perform this function). All of the tools we used took significant time to scan our test networks of more than 100 hosts and often disrupted services (depending on the strength of the scan). Scheduled audits outside business hours are an important way to prevent

SECURITY MARKET CONSOLIDATION

Increasing competition to provide one-stop enterprise security solu tions has resulted in a number of recent mero ers and acquisitions in the security market. In the month of February alone three important events occurred. On Feb. 5, Axent Technologies announced a merger with security vendor Raptor Systems. Raptor will now become a unit of Axent and the new company will trade under the name Axent Technologies Inc. On Feb. 18. Cisco Systems announced its acquisition of WheelGroup. Cisco will use Wheel-Group's intrusion detection technology in its switches and muters. The \$124 million deal is scheduled to close in mid.March On Feb 23 Network Associates announced it plans to buy firewall yender Trusted Information Systems Network Associates came into being in December 1997 after McAfee Associates acquired Network General

WHAT DO YOU THINK? If you have questions or ments regarding this Test Center Analysis nlease contact John Broderick at john_ broderick@infoworld

com letters may be

Editor section.

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 Although these tools are immense time-savers when it comes to assessing the security of most of the mainstream hosts on a TCP/IP network, we found they are not yet capable of identifying all potential flaws in a

diverse

enterprise

network.

this kind of disruption on your network. The great thing about all of these tools is that you get to go about other business while the software does its work. Once this is done, however, the real shooting begins.

III THE THIRD STEP: THE REPORT

Explosive results

Auditing tools make it quite easy to generate reams of text and more than a

few graphs on every conceivably exploitable hole in a network. If this information fell into the wrong hands, the results could be explosive. It is important to clarify who will receive copies of the audit report and to make

them sign for their own printed (not electronic) copy for which they will be responsible. Distribution should be extremely limited and the original should be stored in a secure place for ► Network security, page 60

SECURITY HOTSPOTS TO WATCH FOR

UR LIST OF SECURITY hot spots offers a glimpse of the more serious security flaws we found on our test network. Browsing through the list you will see that some obvious trends emerge. Make sure your network operating

system has the most recent security patches. Make sure that password length, complexity, expiration, and reuse are a part of your security policy, and enforce this with the NOS or with third-party tools. Disable or rename standard system accounts such as

Guest or Administrator, and make sure the default passwords are changed. Do not permit blank passwords. Carefully compare network services

to what is allowed in the security policy, especially what is allowed through the firewall. Examine all start-up and

configuration files for potential security holes and malicious entries. Make sure security logs are secure and cannot be overwritten. And finally, examine any special trust relationships or privileges that exist between machines, applications, and users.

Perimeter



Routers

On its internal interface, our router was found to be running Teinet and SNMP standard services for management purposes. Do not run these insecure services on a router unless you have to, and if you have to run them the obvious warnings apply: Make sure Telnet is allowed only from specific, trusted hosts and that SNMP is configured to use pri-

vate community names. As for external vulnerabilities, arrange a scan against your router from your Internet service provider or WAN provider's network if at all possible. If you haven't already, consult closely with your provider to determine what measures are in force on its network to protect your gateway.



Messaging servers
Post Office Protocol (POP) and Internet Mail Access Pro (IMAP) vulnerabilities are being exploited with regularity according to many recent studies, and our server was no exception. Internet Scanner found our versions of the pub licly available POP and IMAP daemons vulnerable to rebuffer overflow conditions, and pointed us toward the lat-



six-month intervals at least.

Firewalls

Although our Internal proxy firewall proved to be fairly risk-free, this was mostly due to the great pains we took to ensure that the latest service pack and hot fixes were applied to the underlying Windows NT installation. Work closely with your firewall vendor to obtain the latest information on such updates, and keep up the regular audits at



Remote access

The tools we used in our audit only probed our Remote Access Server (RAS) from one side; that is, internally, it found no serious problems --- only that SNMP, trace-routing of packets, and vendor-specific management ports were available. However, these tools could tell us nothing about our exposure from external forces at this critical entry

into our smaller test network. We would have to perform a manual audit of our RAS box, Including user accounts, password strength, dial-back parameters, and so on, to truly assess its security. When planning an audit, make sure to note those devices that are not fully accessible by the audit tools you are using, and allocate additional time and resources to adequately test them.

Windows NT

As demonstrated by our audit results, the best advice we could give for NT security is keep up with your service packs and hot fixes at ftp://ftp.microsoft.com/bussys/win nt/winnt-public/fixes/usa/nt40. Also keep your eyes on NT hacker sites for new and innovative attacks that may take time to reach Microsoft. The top three vulnerabilities found in our (nondenial of service) scans were that the Getadmin patch was not applied (described in the hotfixes-postSP3/getadmin-fix directory under the ftp address cited above), that Windows Registry Keys had incorrect permissions (see Microsoft Knowledge Base Article 0126713), and that the NT Security log was accessible to domain users, it was more difficult to assess denial of service vulnerabilities on NT because the scans kept crashing our target hosts. The moral of the story: Get the latest service packs and hot fixes (can we say that again?).

NetWare

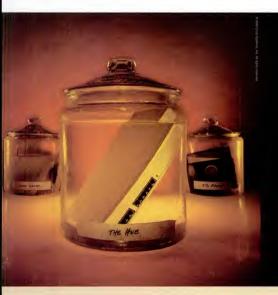
We were surprised to learn that our default NetWare 4.11 with TCP/IP installation was found to be running the chargen and echo services, which could be exploited to congest traffic on a network. Enterprise Security Manager found some host-based vulnerabilities that the scanners did not: Intruder detection was disabled, and our Autoexecuncf file contained no commands to secure the console or remove DOS at start-up.

Sun Solaris

Our internal Solaris server had a CD-ROM drive that was Network File System-exp ed to the network for purposes of Installing Solaris on other Sparcs, and this set off all kinds of alarms on both our host- and network-based scans. We also got several warnings about SetUiD/SetGID privileges on files. Although these may not be security flaws in and of themselves, this points to the potential for problems and the need to assess privilege at the file-system level. This machine also was found to be vulnerable to finger bomb and had the chargen and echo services running.

Windows 95

Win95 never was intended to be a secure operating system, so you probably want to minimize the time you spend securing your desktops. For example, our scans found vulnerability to the NetBiOS port 139 DOS attack, but there is little an administrator can do to fix this problem. Our advice: Make sure Win95 users are acquainted with the pertinent sections of your security policy about logging out if away from their desks and basic password security (you do have that section in your policy, right?). Althou we found none, Internet Scanner also did an exhaustive check for network ports avail able for game, Internet Relay Chat, or other recreational services that could pose security threats in a production environment.



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TEST CENTER ANALYSIS

Security audit resource guide

The resources listed here should help administrators to better evaluate the security of a network and to become familiar with the tools that will be used against them. These materials are presented as a starting point, and they will provide links to other resources for further evaluation.*

CIAC	U.S. Department of Energy's Computer Incident Advisory Capability	http://ciac.ilnl.gov
CERT	Computer Emergency Response Team Coordination Center	http://www.cert.org
FIRST	Forum of Incident Response and Security Teams, a coalition of computer security incident response teams from government, commercial, and academic organizations	http://www.first.org
Bugtraq Archives	Searchable archive for Bugtraq, a full-disclosure Unix security mailing list	http://www.geek-girl.com/bugtraq
CSI	Computer Security Institute, the oldest international membership organization offering training specifically targeted at information security professionals	http://www.gocsi.com
ICSA	International Computer Security Association, an independent organization that strives to improve security and confidence in global computing	http://www.icsa.net
The Ivory Tower		
COAST	Computer Operations, Audit, and Security Technology, a computer security research program at the Pondue University Computer Sciences department	http://www.cs.purdue.edu/coast
UC Davis SecLab	"The Best Academic Computer Security Laboratory in the Nation!"	http://seclab.cs.ucdavis.edu
Hacker haunts		200
Rootshell	More than 500 searchable exploits	http://www.rootshell.com
Hacked.net	Tips, alerts, help, information, administration tools, applications, screen captures, and Web security-centric exploits	http://www.hacked.net
LOpht Heavy Industries	A top U.S. hacker hangout (But why can't they spell?)	http://www.l0pht.com
The Legacy	News, lists, code, links, and so on	http://www.jabukie.com/hacking.html
Jan's Hacking & Cracks page	Windows 95, Windows NT, and Noveli hacks	http://www.mwright.u-net.com/hack.htm
Digicrime	Full-service criminal computer-hacking organization	http://www.digicrime.com
Fyodor's Playhouse	What history has taught us: Never underestimate the amount of money, time, and effort someone will expend to thwart a security system	http://www.dhp.com/~fyodor
Underground	A slightly inscrutable site, but worth it	http://underground.org
Rhino9	Releases technical security papers, holds lectures, and develops freeware security software for network administrators	http://www.rhino9.org
Technotronic Security Information	Extensive vendor-specific files, links, forum, and so on	http://www.technotronic.com
InterCore Security Group	Up-and-coming hacker resource	http://www.fth.org/intercore
The Hackers Layer	A list of every crack from September 1996 to January 1998	http://www.lordsomer.com
The X-treme Security Research Team	Underground group concerned with providing useful, cutting- edge information to the hacking public	http://x-treme.org
2600 Magazine	A hacker quarterly	http://www.2600.com/mindex.html

to get into the lab and start hammering at our test network, we broke the first rule of performing a security audit — before you do anything else it is crit-

ical to define

the reasons for

conducting an

audit.

*A none extensive wisson of this list appears online at http://www.infowardd.com/printfinks.

*Nettwork security (from page 58)
comparison with the next network audit (this means it should not be stored
on the network, and encryption should
be considered.)

[Internet Scanner pick
herbords service running

Risk Analysis, Policy and Lega Trident Data Systems (TDS)

Internet Engineering Task Force Baseline Software

Electronic Frontier Foundation

What did we think of the reports Although these tools are immense time-savers when it comes to assessing the security of most of the mainstream hosts on a TCP/IP network, we found they are not yet capable of identifying all potential flaws in a diverse enterprise network. A key point of ingress into our test network. A way point of ingress into our test network, our remote-access server and modern pool, was more or less overhooked by all of these tools.

The next thing that struck us was the difference between the reports of the network scanners and Axent's host-centric tool. The scanners pointed out the doors on our test network that either were unlocked, ajar, or wide open. ESM, in contrast, presented a compre-

hensive view of what lies behind those doors down to the file level, (See Security Hotspots on page 70.) For example, Internet Scanner picked up every network service running on our test subnet and even found some potential suffames and even found some potential suffames that output for the privileged access to critical resources. It also pried vigorously at our firewall, trying known vendor-specific plays and brute force attacks, to no avail brute force attacks, to no avail or the force attacks.

A source of information to the hacker community since 1985

Refer to Information Security Policies Made Easy, by C.C. Woods

Refer to RFC1244 Site Security Handbook

Computer Crime Legal Resources

Legal Archive

Refer to TDS'Information Protection Toolbox, a sophisticated risk analysis tool

"The world's most comprehensive collection of already-written information security policies"

ESM isn't really equipped to identify such problems. Instead, it assesses file and object integrity, file privileges, account integrity and password strength, start-up files, backup integrity, and a host of other system-centric holes by comparing them with user-defined parameters. So with ESM, there are no "vulnerabilities" per se, only exceptions to the policy rules you define.

For this reason, we recommend that you use both network and host-based the security of your network during an audit. And not only for the comprehensive perspective this offers. Having both tools around is a good way of implementing 'defense in depth,' with multiple checkpoints through which an attacker must navigate to get at the goodles. This means less chance of a hole being overlooked.

tools to obtain an accurate picture of

Overwhelming data

The sheer amount of data generated by hese tools (even on our 15-host test network) can be overwhelming. For example, we went a little overboard on one ESM policy run and defined a policy rule to assess ownership privilegar on certain local files. The resulting printout for this agent included more than 100 pages of data on the group ownership of all linf files on one of our NT workstations. This is an extreme

example, but it illustrates the concept of restraint when gauging the amount of audit information that is pertinent and useful.

http://www.fc.net/phrack.html

or http://www.2600.com/phrack

ftp://ftp.isi.edu/in-notes/rfc1244.txt

http://www.baselinesoft.com

http://www.eff.org/pub/Legal

http://www.tds.com

Web address

This also points to the importance of a good reporting component in an auditing tool. Internet Scanner was the best of the bunch we looked at, providing snappy-looking reports for various levels of personnel (executive, management, and technical) with imbedded color graphs and references to further information on vulnerabilities that it found. On the other end of the spectrum, ESM could only spit out drab, monospaced reports that provided little more than a numeric score to define the holes it had sniffed out. Color graphs and more specific information about vulnerabilities can be found in the GUI, but you cannot print them out in the current version. Both tools let > Network security, page 62

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Nicrosoft Visual Basic for Applications is the most commonly used software austonization tool in the world. And now VBA is available in the world's leading financial applications for BockOffice Dynamics and Dynamics C/S+ from Great Plains Software. That means if you can write a macro in Excel 97 you've already got what it takes to instantly and easily customize your Dynamics financial system. VBA also lets you create seamless integrations with the entire Office 97 Suite, Visio and mare than 100 of the world's most popular applications. Want mare? Call 800-456-0025 for a free VBA technical whitepaper, or visit our Wbb site to download actual demax.





► Many

managers

may view

security as

abstract piece

infrastructure

one more

computer

- another

black hole

with little

chance for

return on

investment.

to the

network

nontechnical

TEST CENTER ANALYSIS

Network security (from page 60) you double-click chart objects in the

GUI to drill down on specific problems to the machine level Some of our data revealed rare and difficult-to-exploit vulnerabilities that could seriously sap an administrator's

time tracking them down. One vulnerability on our test net-

work that Internet Scanner termed "se-

vere" was the availability of the "admind" tool on one of our Sun Solaris hosts. We spent more than one hour tracking down this vulnerability and never achieved a satisfactory description of what it was, or whether it was

truly applicable to our distribution, Nor could we find the location of the patch. It is safe to say that you should be prepared to devote the lion's share of the

time in an audit to going over the data it produces and carefully evaluating the priority of the problems it turns up.

Then it's time to reassess your original risk analysis and security policy. followed by the next audit and interpretation of the reports it generates. Isn't the cyclical nature of security fun? This cycle should continue unabated until such time as computers are no

longer networked. So who feels like they just had a root canal?

We will leave you with some final words of advice: Having the hottest new network-blasting scanner reviewed by InfoWorld is not an excuse to shift your brain into cruise control. Remember the process, and always maintain a healthy fear of what might be lurking out there in the void.

NITSNIERCING YNUR SFRIERITY PROBLEMS

By Ioel Scambray

OR MANY COMPANIES, shrinkwrapped auditing tools may be virtually useless without someone to accurately interpret them. If your security needs go beyond the usual, or if you lack the resources or business motivation to develop such expertise in-house, the watchful eve of a savvy network security guru could be the way to go.

To gauge the difference between what you can buy off the shelf and what you can get from an outsourced solution, we asked the highly regarded International Network Services (INS) consultancy to do a "mini-audit" of our test network. Due to our editorial time line, the mini-audit was a compressed version of the full-scale security consultancy service that normally takes place during a period of months or weeks. Despite this, we got a strong sense of what's involved in outsourcing security needs and, in particular, the benefits a consultant brings to an audit.

Not surprisingly, because INS used many of the same tools and approaches that we used in our own internal audit, many of the same vulnerabilities were found. What set it apart from our self-audit was its focus on the process, extra-technical expertise, educational focus, comprehensive scope, and cost,

INS starts an audit with nontechni-

cal factors and moves progressively through to more granular levels of detail, to the technical underninnings of a company's security requirements. Essentially INS uses a four-step process: assessment, interview, audit, and design/recommended solutions. One immediate advantage to this methodology is that it forces clients to adhere to a security process rather than rush headlong into a technical investigation phase without laying the proper groundwork at the corporate policy level (as we did with our test audit).

Reading habits

We were impressed by INS' top-down focus on security education, especially at the executive level, in which "...opinion and attitude is often shaped by the last thing they've read." Dilbert could not have said it better himself. Clearly, we were dealing with an organization experienced at getting management buy-in to a comprehensive security stance, a skill not always found in internal IT departments.

INS suggested that the scanning be divided between perimeter (Web servers, remote access, etc.) and internal scans, and that the internal scan should comprise just a small subset of a larger network. This is akin to performing a biopsy to determine whether or not more comprehensive network surgery is required. This was a savvy acknowledgement of an often overlooked use of network scanners: justifving a long-term budget for security.

INS used Internet Security Systems' (ISS') Internet Scanner 5.0 for Windows NT to probe our small test network from which INS generated its final report. Besides Internet Scanner. INS also offers specialized tools such as war dialers to probe for unauthorized modems and ISS System Security Scanner to assess host security. In our discussions, INS representatives expressed a broad knowledge of all major security products on the market today, as well as a strong desire to match tools to the needs of clients.

A cut above canned reports

After an afternoon's worth of poking and prodding our test network, INS presented us with the results of its scans, and a sample assessment report it had created for a former client. Of course. Internet Scanner found exactly the same vulnerabilities we did when we used the product on our network, but the assessment document was much more than a re-hash.

This document addressed such wide-ranging issues as the need for dedicated security personnel, physical security, organizational structures, best practices based on INS experience, and it included enough charts, network diagrams, time lines, summaries, and prioritized recommendation lists to shape up even the most slothful of cor-

porate security postures. The scrupulous attention to detail and personalized tone of the document placed it a cut above the canned reports generated by the shrink-wrapped tools.

There are a couple of obvious caveats relating to security outsourcing. One, the standard rules about limiting the distribution of an audit report apply tenfold when an outside party generates the report. Make sure your consultant is someone you can trust with extremely sensitive, confidential data. Two, be aware that knowledge of your company's main security weaknesses puts an outside auditor in a strong position to sell you additional services to remedy those weaknesses. Neither of these problems applied to our experience with INS.

As you would expect with an outsourced service, none of this comes free. Typical parameters for a comprehensive security consultancy range from six to 10 weeks and \$80 to \$100,000 for smaller organizations, and as long as six to nine months and about \$300,000 for large enterprises, INS generally calculates a cost of about \$175 to \$250 per consultant per hour.

The impact of these numbers depends on your particular budget, of course but based on the costs estimated for personnel and technology to set up your own in-house audit, these amounts felt reasonable for the comprehensive service provided by INS.

Security audit checklist

The following list is based on the Test Center's security audit experiences and well-known best practices compiled from our research,

1 Before you start et management buy-in Perform risk analysis --- Know thyself, know the business What is acceptable? Set expectations and goals Draft security policy - Now would be a good time to draft one Consult the experts: RFC1244 and more (see "Security audit resource quide," page 60)

nine: Type of audit --- host, network, firewall Severity --- heavy, normal, light Perimeter vs. Internal Scope/scale - Start small and leverage results for more security spending Verify integrity of public domain Obtain network licenses, etc. Schedule and plan for outsourcing

Interview personnel

Review documentation -- Inventory, topology, emergency procedures, logs

Use the great tools currently available, but don't forget your brain - the tools won't find everything Plan for outages, and schedule audits for off-peak hours

Safeguard report and distribution Prenare for data overload and set aside time to read and investinate

Be aware that report may raise more questions than it answers Leverage results for a stronger security posture

Prioritize action items, set time line, implement Feed findings back into risk analysis, policy - i.e. start all over again Start thinking intrusion/detection . . . and revisit risk acceptance in (1) Remember that security is a continuous process, not a static solution

Secure your platform/OS

Get interdepartmental and location approval

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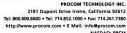
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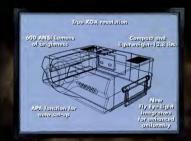
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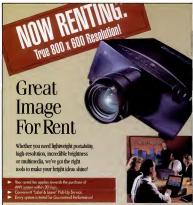
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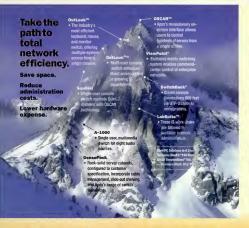




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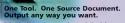
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By Julie Bort

ata warehouses and data marts are still struggling for respect. Well-intentioned projects aimed at leveraging the power of corporate information can often end up as failures, skidding over budget and past deadlines. This puts IT managers in a tough spot. Rush the job and you get a slow, resource-hungry application. Take your time, and

you risk coming under fire.

And then there are performance issues that arise from the nature of the beast. That is, even if by some freak of circumstances, every original assumption made about a data ware-house/mart was correctly guesced, performance degradation would still occur. As analysts bang away at a data mart and the amount of data grows organically, usage and performance requirements can change.

Now that the data warehouse/mart industy has matured a bit, some standard techniques are emerging that will boost virtually any decision-support system. At what point should you start your tuning? Experts say that performance data collection should start inmediately. In particular, you should be using database analysis tools to log both what data is gets most used and what types of queries that data gets used. Equally important is what data is hardly touched and — hardest to

answered.

"One of the things that is fairly straightforward is that they analyze

straightforward is that they analyze regularly, and the kinds of data accessed, "explains know the data. Rick Roy, vice president and general manager at Matl Data Services, in Milwaukee, asystem integrator of decision support systems for the banking financial industry. "What in: 1 straightforward is when users are making requests and the mart can't satisfy it. Then you need to find out why not."

Roy suggests training users to contact you if they have a query that has failed or that took too long to answer. Database managers agree.

too long to answer. Database managers agree.
"When going through the process, if users
get an unacceptable response time, we sit
down with the user and ask them 'Is this
something you're going to do on a regular
basis?" says Terry McDonald, information
resource manager at Hoffman Enclosures,

a manufacturer of electrical enclosures in Anoka, Minn. Hoffman Enclosures uses a 10GB mart built

on an AS/400 using DataTracker, data-mart software from Silvon software, in Westmont, Ill. Currently the mart performs sales and marketing analysis, although McDonald says that the plans are to expand it for financial and nanufacturing queries. Users are trained that acceptable response-times, even for ad-hoc queries, range from 30 seconds to 2 minutes. Users that get response times of 15 minutes are required to contact the IT cases.

"We are constantly working on keeping the performance lined up with users' needs, and to encourage them to come to us when having performance problems, rather than looking for alternative solutions," McDonald says. "We want to show them we are re-

sponsive and we do make changes

The keys:
simplify deAfter about a year of information

After about a year of information sign, monitor gathering, you have reached the magic time for your first major tuning, experts say.

"We've found that in most cases of implementation, at 12 to 18 months the customer goes back into the thing and says, 'Let's re-implement,' " observes John Hughes, vice president of marketing at Silvon Software, a darmar vendor and system integrator in Westmont, Ill.

It takes approximately this long for IT managers to gather enough information on how users are accessing, and it takes about this long for users to fully understand what they really need from the system — as opposed to what they actually asked IT to provide when the system was built.

SLIM DOWN. Probably the biggest immedi-



ate boost you can give your system is to re-

duce the amount of unnecessary data that

you are loading, storing, or having to sort

through when querying. In fact, experts

agree that "too much data" is the No. 1 de-

sign mistake made when building decision

"Most people try to incorporate too many

things into a data mart," says leff Wingo, data-

mart designer at Axiom, a data-mart system

integrator in Conway, Ark., "A lot of times

[designers] are just thinking really far ahead.

They may eventually want to integrate with an

accounting system or telemarketing system,

so they start to design that into their mart. In-

stead of completing it and making it useful,

warehouse becomes the gold source of

scrubbed data. The warehouse can then be

support systems, particularly marts.

used for a series of departmentspecific or application-specific marts. Queries to the warehouse itself would be restricted to the few people that needed an enterprise look across departments, such as the chief information officer.

"The warehouse provides a common ground for data," says Ed Connelly, a systems architect at Axiom. "It should be unbiased, just the raw data that hasn't been formatted by say, applying the accounting department's algorithms."

LOADING AND DUMPING. When trying to slim down

a plump warehouse, simply dumping unwanted data solves only half the problem. Even more importantly is loading, users

say.
"When we built the data
mart, everybody wanted
everything," says Todd
Greenwood, database marketing manager at Harvard
Business School Publishing, in

Boston. "We now realize that all of that's not needed. So we can go and redo our extraction routines so that the data mart takes a subset of information."

This non-profit division of Harvard University uses Analytix, a Windows NT-based data mart from Customer Insight, in Englewood, Colo., for a sales and marketing mart. The SGB system supports approximately 300 10 direct users among approximately 300 employees. Those 10 do primarily ad hoc queries for this book and multimedia publisher at Harvard.

In addition to cutting the unnecessary volume dumped and stored in the system, another way to cut data is to give it a reasonable expiration date.

"The biggest problem I see is the period of a time they want the data to be in the ware: I house," says Mike Beronick, senior project manager of data warehouses at M&I Data E Services. "If you structure it so that you're adding other relations and other stuff as needed, over time, you're going to lose per a formance. The experience of getting the 3

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same file over time will be slower."

One technical red flag that you have an overweight database is the complexity of the data schematic, experts say. If you're contemplating moving to a snowflake schema so that you can add more dimensions to your data, chances are you're making the system more complex than it needs to be, particularly in the case of a mart.

larly in the case of a mart. With a warehouse, a nowflake may eventually become necessary, but it should be viewed only as last reset, say lagdish Mirani, product marketing manager of data warehousing at Orace, in Reclwood Shores, Calif. As tar achema is the norm because such schemas epresent the basic dimensions of schemas represent the basic dimensions of schemas represent the basic dimensions of schemas represent warehouse of schemas represent warehouse of schemas represent warehouse schemas represent may be address or account number. Should such as a should be the solution.

"But data models are something you don't want to change on a daily basis," Mirani warns.

SIMPLE STRUCTURES. Instead, both mart and warehouse managers should take advantage of some of the less complex ways to tune their systems. King among tuning techniques is the summary table. Query speed can be significantly enhanced for common queries if the data is compiled into a summary table. However, other areas may take the performance hit, warms Hughes. He believes that overall performance is a balance of three items; query response time, disk consumption, and the 'batch window' of time t takes to load data.

Emphasizing one of these means trading off on the others. For instance, you can significantly speed up your response time with summary tables, but that requires more disk space and more time for updates to load. You can reduce disk consumption by using fewer summary tables, but response time may suffer. If you are loading changes nightly, you are loading changes nightly, you may not have the time to add significant numbers of query tables and still have the system available for work in the morning.

Limiting the number of people who have access to ad hoc query capabilities — and then training them well — will also increase performance. This is the suggestion of David Roquemore, supervisor of information management at 5 an Diego Gas & Electric (SDGE), in San Diego.

"A lot of users just want to see a report.

They don't care how it got there, they just want to view data," Roquemore explains. To that end, SDGE uses canned reports whenever and wherever possible, and limits ad hoc query capabilities to identified "power users." he says.

Anytime the same query is asked routinely, performance can be enhanced by issuing a pre-determined report. Power users who are trained on how to structure ad hoc queries can then go in and drill down for more information, if needed.

KNOW WHERE YOU'RE GOING. Along the same lines are performance problems that crop up as a decision support system, particularly a mart, is asked to do too many things. Performance tips for data marts

- Don't use a snowflake schema. This indicates that you have got too much data and too much complexity, and it is a schema that is nearly impossible to fine tune or alter at a later date.
- impossible to fine tune or alter at a later date.

 Limit ad hoc queries to your power users, and make sure they are trained on how to perform them.
- Train users on what acceptable response times are and what to do if the system fails to meet them.
- Aim for response times of less than 2 minutes to keep users from pulling support away from the project and building their own department marts.
- Audit systems should monitor performance on a daily to weekly basis, no longer.
- Include an analysis of the network while monitoring performance.
- ► Use canned reports for information that is routinely

"Keep the mart intent on what it is doing, and have it do one thing," M&I Data Services' Beronick says.

In fact, the smartest long-term performance tuning you can do doesn't even require you to point and click: Develop a plan for integrating multiple data marts, says Tom Hammergren, product manger for data warchousing solutions at Sybase, in Burling-

ton, Mass., and author of Data Warehousing: Building the Corporate Knowledge Base (International Thomson Computer Press).

"It's sometimes called Lego marts. It's an enterprise warehouse of marts that should just plug together," Hammergren says.

such easy integration is accomplished by creating a model by which all marts will be built. That is, the company should standardize on basic definitions of commonly-used data, such as customer or product, and then "each group should be able to extend the definition" so that it supplies the data they need, Hammergen captains. For example, the "customer" field will be identical from system to system when it comes to name, address, and deephone number. However, the accounting department may also have a credit rating, and the sales and marketing department will add demographic data.

Using Lego marts is a strategy that works well, says Mark Kaminski, senior vice president of information technology at Compu-Search Micro Marketing Data Systems, in Toronto.

CompuSearch uses Sybase IQ as the basis for a series of marts that it uses for its flagship service, marketing demographic data and reports. Kaminski says that smaller databases mean much faster query response times. For CompuSearch users, 3 minutes is too long.

"We find that warehouse projects in general Born have a high failure rate. It's better to attack it ing:

as a bunch of marts," Kaminski concludes.
"What users want is to execute and then reexecute their query. If they can't do that in seconds, you lose the advantage of the tool."

MANAGE EXPECTATIONS. Of course, the system isn't the only part of the equation that needs ongoing tuning, Database managers are well-advised to "tune" their users as well. This means managing expectations of what is and isn't acceptable performance and conducting regular interviews with users to ensure that they report performance problems.

In addition, your team should also learn as much as it can about the business side of the system.

"You want to spend the lion's share of your infinite resources on answering the most important questions for the business," Harvard's Greenwood advises. "I work closely with the marketing manager and director of marketing so that I work on both sides of the frence, marketing technology and business. They have to work in tandem." And, if all else fails, throw hardware at it.

This will not cure a poor design, but it is definitely the solution if the CPU or memory is being taxed. Again, careful auditing of your system should point the way.

A frequent InfoWorld contributor, Julie Bort, in Dillon, Colo., is the author of Building an Extranet (John Wiley & Sons).

HOTSEAT

Data warehousing attempts to cross chasm

ATA-WAREHOUSING expert Wayne Eckerson recently joined the Gaithersburg, Md, Data Warehousing Institute as vice president of technology services to spearhead research for the Institute. He spoke to InfoWorld News Features Editor Martin LaMonica about the ongoing debate between data marts and data warehouses.

What are the pressing issues for people looking to set up data warehouses and data marts these days? If you've read the book by Geoffrey Moore, Crossing the Chasm, he talks about how most new technologies go through this cycle some actually don't make it through, but the pivotal point is after your innovators and early adopters have picked up the technology and taken a risk and done a lot of the work themselves to make this technology work, then there's this big chasm - a big gulf between the risk takers (the early adopters) and then more of the mainstream users. Early majority, late majority, and laggards, as he calls them. Right now, I think warehousing is in the chasm. We're waiting to see if it will cross the chasm. Initially warehouses were hard to build for a number of reasons ... I mean, warehousing was just hard, because most of the projects were scoped too large. They required users to be systems integrators. And they were extremely expensive and prone to failure because they were too large and too ambitious. Data marts have been a reaction to that.

But there's been some backlash against data marts? Well, yeah. The backlash against data marts is Wayne Eckerson, vice president of technology at the Data
Warchousing
Institute

that, if you do them willy-nilly, you create sislos of information that at some future point you will probably have to integrate and, in the end, you probably are doing things redundantly and spending more money than perhaps you should. So the trade-off is speed and low cost vs. an architected approach, so there's been a lot of talk in this past six [months] about how to get the benefits of data marts without sacrificing the architecture.

What's the best way to get a balance of having

maybe corporatewide data standards, but still getting focused, well-performing data marts? There's something that's called

an architected data mart, which I started writing about more than a year ago now. The idea is, before you start your first data mart, look around, and see what else has been done. And try and borrow from that, instead of recreating the wheel. So that's the first thing. The second thing [is that] ... the biggest redundancy in multiple data marts is the extraction process. so a lot of companies are adopting this architecture where they separate the extraction from the transformation process. In other words, let's just go ahead and create this large extract pool and integrate the data at a very rudi-

mentary level, and then whoever needs that data, now or in the future, we've got thefure, we've got thefure, we've got thefure, we've got the close of from which they can go — so they don't have to go and do separate cutract sagainst the care activation systems, which would bog down those systems and require separate interfaces, etc. So that's probably the biggest their faces, etc. So that's probably the biggest their power of the comparation of

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IS SURVIVAL GUIDE · BOB LEWIS

To make it up the IS career ladder, you must learn to let others make decisions

MANAGEMENT SPEAK: Next week we will have a retreat for our management team and key

TRANSLATION: We're holding a beauty contest. We're going to pick your brains and then downsize everyone we decide we don't like.

 You don't think this week's contributor wants to reveal his identity, do you?

VE HELD NEARLY every job you can hold in IS, and in 20 years I've never worn a pager. Some of this was dumb luck. When I worked as a programmer, for example, none of the applications I supported ran as overnight batch jobs, so that eliminated one source of pageritis.

For the most part, though, I carefully planned my freedom from being on call. When I managed networks and telecommunications, for example, 1 remained pagerfree, even though we ran a mission-critical operation around the clock. How?

Every time the subject came up I asked the

same question: "What would I do about it?" The team always had analysts on call if something went wrong. They wore pagers. I slept until the next morning. What if they need you for something?"

one of my colleagues once asked. "Like what?" I asked in return. "They know what needs to be done, they'll make the

> right decisions, and if anyone questions their authority they can explain that they had no choice they couldn't reach me because I don't wear a pager." Had I worn a pager I'd have had

to justify it, and that would have meant insisting on being beeped every time someone needed a decision. And that, in turn, would have drained the au-► For more on

thority right out of my team. Even worse, I would have lost a lot of perfectly good sleep.

A lot of first-time supervisors treat

their newfound authority to make decisions the way a child treats a new

Pez dispenser. It isn't the decisions (candy) that matter. It's the process of delivering

them that's fun. Either these supervisors learn the key lesson of career advancement, or the're perceived to be front-line supervisors for the rest

oldest lesson of succession planning: Always be important, but never be essential.

of their lives. That is the

One regular theme of this column is that managing people, getting the job done, and succeeding in your career are independent goals you have to actively align, not naturally converging activities. Here's a case where you can line 'em up pretty easily.

To manage people well you have to delegate well, giving de-

succession

departments,

see page 81.

cisions to the people who report to you. Otherwise they can't grow. Getting the job done? You can't do it all

yourself no matter how hard you try. The fewer decisions you make yourself, the more effective you are planning in IT as a manager. And then there's your career. To

be promoted, you need to pass the following tests: (1) You should at least resemble being qualified for the position you want; (2) You must have created the appearance of having been effective in your last

iob; and (3) You must be easy to replace. This is neither original nor profound, but it is hard to accept. That's because being hard to replace is a key survival strategy for many employees. It's a good one if your goal is

job security. If that is your goal, you should avoid sharing any information that helps someone else do your job in your absence.

If, on the other hand, your goal is advancement, then you have to treat succession

planning as a personal mission. Delegating decisions

makes you upwardly mobile. Your department can function effectively without you, and it probably in-

cludes several qualified replacements for you, too.

Here's the irony: Some managers get the silly idea that it's how they ran things that got them promoted.

Bob Lewis is a Minneapolis-based consultant with Perot Systems, Send e-mail to robert.lewis@ps.net, and visit his forum on InfoWorld Electric (http://www.infoworld.com).

Amoco's key to success: a simple front end ■ Group's intranet encourages users to publish — not route — documents

By Blaise Zerega NFORMATION TO EVERYONE everywhere

has long been a campaign promise of many IT departments, Unfortunately, when fulfilling this pledge, many companies get stymied by interface problems and security concerns. Amoco Chemical's Intermediates Business

Group, however, got past these issues with a custom intranet publishing solution. Accessible from the compa-



ny intranet, the solution delivers the same information found in a typical front-to-backend integrated applications solution - without having to navigate complex interfaces. To build its Web publishing system,

Chemical Intermediates used componentbased C++ code and object models from Concept Five Technologies' Web Publish 3.0, a customizable intranet component toolkit that will be available later this month. "I view [our intranet publishing] as a com-

bination of push and pull technologies," says Kerry Given, manager of information tech-

Chemical Intermediates produces and markets chemical building blocks that make up the raw materials for products such as



KERRY GIVEN, IT manager, says a simple front end is the key to successful intranet publishing.

polyester, paints, and automotive parts. The group's parent, Amoco Corp., is a \$36 billion

company with 42,000 employees worldwide. Given says that hybrid push/pull occurs when, for instance, researchers publish test results and chemical formulas from their desktops to the intranet server and the data is read by other researchers.

On the push side, the intranet server automatically publishes daily plant operating reports provided by an IBM mainframe (formatted as ASCII files), updates to Lotus Notes databases, and forwards email to intranet addresses. Writing the code for these automated processes was fair-

ly straightforward, Given says. Tapping into the group's SAP financial modules was not. "It's hard for us to get access to the SAP data in normal

ways," Given says. "We're doing it quick and dirty rather than mounting a large pro-Given was also anxious

about affecting the performance of the group's SAP application. To get around this, he created a system in which analysts download expense reports as Excel spreadsheets and manually publish them to the intranet server.

Given admits this is a less than ideal solution, but it allows him to steer clear of SAP's complex interface, which can often defeat many intranet efforts.

Another challenge involves the paradox of granting broad access to information while

maintaining needed restrictions and security. "There continues to be a creative tension between our management and staff about locking up information or sharing it with each other," Given says. Concept Five's people/group management

feature can be used to restrict certain information to specified audiences. The profiling feature enables proactive notification to users of newly published information, based on individual preferences.

Given discourages managers from restricting information access by publicizing internally examples and benefits of shared learning, notably by research and development.

Security is achieved by putting the intranet server behind Amoco's firewall and by the use of Lightweight Directory Access Protocol for user identification and authentication. Given worked with Concept Five person-

nel to build a pilot that rolled out in June 1997. Within three months, the solution was deployed to all 1,800 users in Chemical Intermediates. At present, another 1,000 users worldwide are being given phased-in access. The solution also addresses network traf-

fic and storage concerns by eliminating the need to e-mail back and forth messages with 2MB or 5MB attachments, which can consume up to 100MB on the e-mail server. "Now we're encouraging people to store it

once by publishing it [the attachment] to the intranet," Given says Given says that having a simple front end,

in this case a Netscape browser, is paramount to the solution's acceptance. "The other issue is the business paradigm:

to get people to change the way they do business, to change habits, such as publishing reports instead of sending out e-mail and hard copies," Given says.

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State Snapshot

IT opportunities are a mile high throughout Colorado

from the Mile High city of Denver to the so-called Silicon Mountain region of Colorado Springs, job prospects for IT professionals in Colorado are good. Colorado's strengths lie in manufacturing, electronics, aeronautics, and the service industries. The state has added more than 300,000 jobs in the past six years.

"Demand for project managers and CIOs has increased a great deal over the past few years," says recruiter Pat Muscari at Staff Options, in Denver. Muscari says professionals with client/server migration, database, SAP, People Soft, and C++ skills are most sought-after.

Despite the strong need for IT professionals, Colorado's breathtak-

Population 2,277,401 **Unemployment** rate 2.3% Median house price \$143,100 Average salaries (large companies): Vice president of IS \$120,805 Systems Manager \$64,078

Top private sector employers: US West, Columbia HealthOne, King Soopers

SOURCES U.S. CENSUS BUREAU, BUREAU OF LABOR STATISTICS, NATIONAL ASSOCIATION OF REALTORS, POSITIVE SUPPORT REVIEW SALARY SURVEY, DENVER METRO CHAMBER OF COMMERCE

ing scenery and relatively low cost of living allow some recruiters to pick and choose among qualified IT candidates "So many people want to live here in Colorado," says Bonnie

O'Donnell, an account executive at Management Recruiters in Denver. "Prospects for IT managers are very good, but people coming from other parts of the country may have to accept slightly lower compensation packages."

Meanwhile, 70 miles south of Denver, Colorado Springs is emerging as a hotbed for high technology because of thriving software and semiconductor companies and the fact that many companies with headquarters in Silicon Valley maintain a large presence there.

- fim Battev

THE CAREERS WEB HOTLIST

Work and family sites worth checking out

Parenting Q&A http://www.parenting-qa.com Families Plus posts Parenting Q&A, a collection of parenting resources. Check out the Work & Family section for information on time management, along with links to books, organizations, and tip sheets.

BabyCenter http://www.babycenter.com

Parenting tips, news, and user interaction are among the features on the BabyCenter site, Visitors can create a customized personal page or browse the Working Parents area for helpful articles, listings, and interactive resources.

family.com http://www.family.com Disney Online offers family.com, a comprehensive site filled with information subjects from travel to cooking. Visit the Parenting section for useful tips and search a database of more than 100 national and local parenting publications.

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STAFF TRANSITIONS

Good planning smooths the way

By Amanda J.S. Kaufmann Months ago your IT staff pulled off a transition from Unix to Windows NT, but your help desk is now getting bom-

With a seller's market out there as far as IT careers go, key staff members decide to jump ship. You do not have anybody to fill in the holes. Now what do you do?

At the top of your list should be to start planning now for the next time a member of your staff moves to a new company or a new job. This will help you avoid the scrambling, stalled projects, and disgruntled staff that result when someone with key skills leaves an IT group. Successful succession planning

hinges on some very important processes: outlining employees' predominant skill sets; developing skill sets that are lacking or need to be shared to be fully beneficial; forecasting the needs of your company; and communicating to all concerned what skills will be

needed.

That's right: Everybody needs to talk to everybody else. Only when you communicate can you then strive for consistency. And it is consistency - in employees' shared knowledge base, for example that will get you through a crisis as well as start you down the path toward a productive future.

You can begin tackling the situation with a snapshot of your staff and how it currently operates. Ask a few obvious questions: How are people doing? Who's on the verge of retirement or advancement?

This will get you "planning for the systematic tracking of orderly succession flow of talent through the organization," says Jeffrey Beth, a principal at Advanced Information Management, in Santa Barbara, Calif., who helps Fortune 1000 companies see the potential that lies within their employee pool.

By identifying potential staff moves, you can begin to understand what needs to happen to cov-

barded with end-users' questions. er the workflow when a particular person is miss-

ing, or what it will take in order to pro-

mote somebody else to

fill that position. It may even get you thinking about what to look for when hiring future personnel.

The sooner you begin to consider these issues and implement change, the closer you will be to one less IT

staffing nightmare. David Clarke, CIO of W.L. Gore & Associates, manufactur-► Bob Lewis

as your

page 79.

ers of medical fabric elecsays you need tronic, and industrial a plan for products in Newark, Del., replacing your points to a strategy: Hire self as well IT employees who have skills that transcend comemployees. See puter science and that give them insight into the environments of those they

support. Is the company's business high finance? Then look for computer scientists who have a degree

Clarke also tries to identify the "intangible influences" an individual possesses, such as team-player qualities. When he is faced with having to replace someone, he says these qualities tend to "raise the bar" in his selection process.

Building a team of informed players will help the operations of your staff even before the next person leaves.

Tom MacIntosh, director of On-Site Technologies' Help Desk Management Services, in Columbia, Md., stresses how important communication and consistency are in his line of work. "[Help-desk staff needs] to be

consistent: No matter who (an enduser | gets on the phone, that person is similarly knowledgeable," Mac-Intosh says.

Granted, consistency does not

come easily. With the constant change in

technology, IT staff members need a lot of training to keep up with their own responsibilities - and even more if they are to learn to fill in for others. "[IT] departments can't turn the

crank fast enough," says John Hollinger, a managing partner at New Technology Partners' consulting division, in Manchester, N.H. Keep in mind that standardiza-

tion and education need to be in place on all levels.

Jennifer Szulinski, a project manager at OnSite Technologies' Help Desk Management Services, cites as an example the fact that when support staff members don't get the training they need, end-users often bring technology to the desktop first, leaving IT staff to figure out who is running what and how to deal with it. So, after cycling through these

steps, take another snapshot. How are you doing during crises now? How is the future looking? Look for trends - the revolving door, as it were. And resolve to stop it from spinning uncontrollably.

Amanda I.S. Kaufmann is an independent editor and writer in the San Francisco bay area. She can be reached at kaufmann@wco.com.

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Editorial Index

Business Applications Best Imperativ HRMS27 New Dimension Software Platinum Technology Platinum SOL-Station/Team, Version 3.192

Network Applications Certicom Security Builder 2.046 Conversational Computing Conversa Messenger..... CyberMedia Repair Engine 1.1.....37 General Magic Serengeti30 Hewlett-Packard Firehunter37 Hewlett-Packard ManageX 3.0.....37 Hewlett-Packard MeasureWare Service Reporter..... Hewlett-Packard OmniBack II 3.0...37 Hewlett-Packard OpenView IT/Operations

Network Hardware Asante Technologies FriendlyNet 8+2 FS3208 and FS3208Plus42D* Hewlett-Packard AssetView 3.037 MediaGate EdgeCommander Universal Edge Server..... Micro House International ImageCast 2.042B*

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Netscape SuiteSpot 3.548A**

Bandwidth Manager

Network Management Hewlett-Packard NetMetrix.....37 Symantec Norton AntiVirus for

NetWare 4.042A* XcelleNet RemoteWare AntiVirus

Manager38

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InfoOuote Form35

Kingston Technology ...96

http://www.kingston.com

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http://www.infoquote.com

http://www.gw2k.com Lawson Software Insight P.I.....32 Wallop Software Build-IT 2.6....48A** http://www.ibm.com

Cidco iPhone Internet access phone .. 92 International Network Services Internetworking and Security Consulting Services

XcelleNet RemoteWare Backup

XcelleNet RemoteWare Inventory

XcelleNet RemoteWare Software

Manager38

Digital Server 500d......27

SCO UnixWare 7......32

Toshiba Equium 7000 series30

Tools and Utilities

Security Manager 4.4

FastLane Phoenix Domain

Miscellaneous

Axent Technologies Enterprise

FastLane Technologies Virtual

Administration Tool for Windows

Reconfiguration Tool 1.142A* Internet Security Systems Internet

Scanner 5.0 for Windows NT.....54

Accrue Insight 2.0.....

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PRODUCT REVIEWS

Remote application software

Hydra constrained by Windows NT

ICROSOFT Windows Terminal Server (WTS), codename Hydra, will be Microsoft's first entry into the remote-application host platform market. Based on technology licensed from Citrix Systems at about this time last year, WTS is

aimed squarely at providing a richer application platform via Windows to underpowered desktop comput-

ers, NCs, and other terminal replacements, Performance is slightly better in this beta version, but it is clear that, until the next version of Windows NT arrives, Hydra will be limited by the operating system's infrastructure.

The first release of this product, expected to ship sometime in the first half of this year, will provide a base platform for running remote Windows applications. However, the forthcoming Picasso add-on by Citrix will be required to enable the WTS platform to reach its full potential.

This beta release of WTS is based on Windows NT Server 4.0. Hydra relies on NT Server 4.0 for some of its critical infrastructure underpinnings, and therein lies the rub.

There are some complex hurdles to overcome when it comes to making this platform capable of supporting multiuser applications and distributed user profile management.

Infrastructure changes

Many of the infrastructure changes needed to overcome these difficulties are in the works for Windows NT 5.0. Microsoft has planned many of these improvements including assigned and published applications, the capability to leverage



provides graphical and command-line based management.

a distributed directory service for user profile management, and ISV support for multiuser application

But it probably won't be until the NT 5.0 time frame that WTS will mature enough to settle these issues. Meanwhile, WTS will have some work-arounds, a necessity that is evident in this release

WTS has a common administration facility used to monitor user connections and processes for both the product's Remote Desktop Protocol (formerly T-Share) and Citrix's Independent Computing Architecture protocol connections.

Microsoft also provides a number of other GUI-based tools that ease the task of managing WTS, but it appears that some of the management functions of the two products will remain isolated.

Microsoft in this release has made strides in end-user screen paint performance compared with earlier betas, but there still is latency.

Loading the apps

Because most applications are not designed to support several users on a single computer, the applications that you deploy on WTS will generally require some tweaking. For example, the registry needs to be altered to accommodate applications that store keys in the HKEY CURRENT USER registry subtree. as opposed to HKEY_LOCAL_MA

= Microsoft Visual J++ 6.0,

Platinum SQL Station92

■ iPhone92

JAVA FOR WINDOWS Maggie Biggs takes an in-

depth look at the preview version of Microsoft's Visual J++ 6.0 and finds it well suited for sites dedicated to Windows but less useful for mixed environments. This entry into the crowded Java tools field won't make it any easier for IS purchasers trying to figure out which package to buy. SOL-STATION/TEAM

SÉRVES UP ORACLE PL/SOL SQL-Station/Team provides a

complete environment for developing server-side database code such as Oracle's PL/SQL. The product includes an editor, debugger, and optimizer as well as tools for managing source code in a team development environment.

Requires personalization

In addition, applications need to ▶ HYDRA page 90

► Systems-management software

Top Tools 3.0 taps browser for central management

By Andre Kvitka T MANAGERS charged

with overseeing PCs in a networked environment know how important centralized management is: It's a lifesaver. There are lots of tools out there aimed at simplifying PC management and most are successful to a degree. but this beta version of HP TopTools takes centralized management a step fur-

ther. Although the beta that I looked at was still somewhat unstable, this is an impressive package. In the rush to decrease

the costs of using PCs, many companies offer centralized management products, Entries in this field include Intel's LANDesk, McAfee's Saber Management System, Microsoft's Systems Management Server,



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most offer some degree of Web support, none are as integrated as Top-

Tools 3.0. The most important difference in TopTools 3.0 is that the management console is a Web browser. This gives network administra-

tors access to hardware resources from virtually anywhere. The sole software requirement is Microsoft's Internet Information Server 4.0 This is a smart bid on HP's part to make Top Tools ubiquitous. Top

Tools has always been impressive, but previously it required a separate management

console. Now the browser is the console and it is free. For HP sites, this is a win-win situation. This browser-based management console enables configuration, administration, monitoring, and sophisticated reporting on desktop PCs, NetServer systems, OmniBook notebook PCs, palmtop PCs, AdvanceStack hubs and switches, and other networked devices. It can also be used to manage standards-based network devices that support SNMP.

For HP sites that have already invested in Open View, the question of integration with TopTools is key. Top Tools will integrate and actually complement an OpenView environment. In my testing, I could select a hardware device from the OpenView network map and double click on the device to launch the TopTools Internet Explorer console. This gave me a lot of valuable information along with control over the device.

TopTools 3.0's console runs on an IIS 4.0 Web server. The very early heta version that I looked at stum-

bled slightly during the installation process due to configuration issues. Once I got it installed, however, the testing went smoothly. To get the best per-

formance from Top-

Tools, it's best to have

a suite of all HP devices running the latest version of TopTool clients. Unfortunately, outside of a testing scenario, that's highly unlikely and that's where the value of Desktop Management

Interface (DMI) comes into play. TopTools 3.0 supports any device that is DMI-compliant. As soon as Top Tools was installed the software discovered all the devices it could on the network. The information was then stored in a database.

I liked that you can do custom searches to determine which machines, for example, only had 32MB of RAM, or a particular version of a specific driver. Once I found this data, I could then deploy a driver update or a BIOS flash to a number of PCs simultaneously.

In addition, I liked the reporting features. The reporting tool allows you to print comprehensive inventory reports, which is a handy feature when it comes time to justify new client purchases.

Top Tools 3.0 is a wonderful solution for medium to large business where hardware is not monitored from one central location. The ease of installation and maintenance. and above all, the price, make this product a must.

Andre Kvitka is a technology analyst at the Infoworld Test Center. He can be reached at andre kvitka@ infoworld.com.

THE BOTTOM LINE

HP TopTools 3.0, beta This software is the first such product to

have the Web browser as the administrative console. IS directors who have Desktop Management Interface (DMI)-compliant computers and hardware will love having contralized control oversuch items as RIOS and driver updates, and alert notification.

 Pros: Access to all DMI and SNMP compliant hardware on the LAN using a browser; visually appealing interface; works as a stand-alone product or integrates with OpenView Cons: Supports Internet Explorer 4.01 or later only.

 Hewlett-Packard Co., Polo Alto, Colif.; (800)322-4772;http://www .hp.com.

- = Price: Free
- Platforms: Windows NT Server: Windows NT Workstation
- = Ship date: April.

► Java development tools

Visual J++ 6.0 tailors Java for Windows sites

By Maggie Biggs

VALUATING AND choosing the hest lava tool to meet enterprise application requirements is a daunting task. Now Microsoft's Visual I++ 6.0 adds a new dimension to the decision-making process giving IS professionals an even more difficult choice between platform neutral vs. OS-specific

The early beta version of the forthcoming Visual J++ 6.0, Technology Preview that I

looked at included new Windows Foundation Classes, or WFC, which are a superset of the Application Foundation Classes found in previous Visual I++ versions. WFC enables developers to create lava applica-

tions that access the Win32 API. Developers who wish to create cross-platform Java applications can still do so with Visual J++ 6.0, though at the expense of less development feature support from the

Visual J++ 6.0 features

Windows Foundation Classes

- Reusable components
- Developer productivity tools
- Enhanced data accessibility Rapid deployment

product. By contrast, Sun Microsystems' lava Foundation Classes (IFC), Version 1.1 and later, offer a different approach by including a set of components dubbed Swing. Swing provides Windows, Sun Solaris, and Macintosh-style graphical interfaces without reducing crossplatform support.

Typical of an early beta release, I encountered some error conditions during my testing. On some machines, when I started the IDE. I received an error message and was unable to launch Visual J++. On other platforms I successfully fired up the product but received errors after launch and during project development.

I found the Visual I++ 6.0 interface similar to other Microsoft Visual Studio tools, such as Visual Basic. I was able to visually design all of the client portions of my test payment-processing application that used WFC. However, I was a bit disappointed to find that I could only use the code window to create my customer inquiry application using the IFC since the visual tools only supported the use of WFC. Software teams will appreciate the Visual Component Manager that allows shared access to comnonents Using either Microsoft Access or SOL Server as the repository to store shared components, development teams can quickly find and reuse a variety of components, including ActiveX and HTML

I found the Visual Basic-type productivity aids within Visual I++ 6.0 yery helpful. For example, the Project Explorer helped me quickly navigate and sort my project files in a variety of ways, such as

by type. The package also includes an integrated visual HTML editor Like Visual Basic, this new Visual I++ version

includes some coding aids called IntelliSense that flag coding errors and provide information to correct them on the fly. In addition, when a developer types in a statement, IntelliSense pops up a window that shows the methods

The IntelliSense assistance is useful for those new to Java and can be turned off via an option setting. Also, unlike the visual tools in this version of Visual I++, the Intelli-Sense coding aids are available whether the developer uses the

for a given object.

Like other Microsoft development tools, Visual J++ includes sev-



DEVELOPERS CAN CUSTOMIZE Visual 1++'s environment with layouts styled after Visual Basic, Developer Studio, and others,

eral wizards, such as the Class Builder and the I/Direct Call Builder. The former helps developers create new classes, and the latter is used to add a Windows method to a Java class

I found the debugging tools to be quite useful when working on my test applications.

To include data sources in my applications, I used the Visual I++ coding window, visual tools, and data-aware components to access my data sources. As in prior versions, the product has tools that allow for an ODBC connection to data. Microsoft has added support for its OLE DB specification to Visual I++. By using OLE DB. developers can include relational data and nonrelational sources.

specification also makes it easier to include data from legacy systems. Also, the product in-

cludes data-aware components that can be dragged and dropped onto a visual form and subsequently bound to a data source.

Notable in the area of data access is new sunport for users who connect directly to the data source on an occasional basis, Developers can cre-

ate applications that move a subset of the data source to the user machine and let them work with it in a disconnected mode. End-user data can be synchronized as needed via a direct connection to the data

After completing my applications, I used Visual J++'s integrated packaging feature to create my executables. Microsoft also supports CAB and Zip distributions. The deployment tools also make implementation an easy process.

Enterprise settings that want to include Java as part of a Windowscentric application model will find Visual I++ has a lot to offer Companies that need to support a mixed computing environment should evaluate this Visual I++ version very carefully.

plication you have to take care of

THE ROTTOM LINE

Visual J++ 6.0, Technology Preview 1, beta

Developers who want to create Java applications especially in Windows, only envimaments will find this wesion of Microsoft's lava IDF full of enhancements that help get the job done. This early beta release is rough, but the product holds promise if Microsoft can deliver the expected features that are due later this year.

- Pros: Enables developers to create both client and server side components: includes familiar developer productivity features reminiscent of other lieual Studio neoducts: offers tools to ease development of data-driven applica-
- tions: provides fast deployment options. Cons: Some IDE features only work for Windows-based Java development: JavaBean development within Windows Foundation Classes applications supported only when the JavaRean is hosted in an ActiveX container.
- = Microsoft Corp., Redmand Wash.: (800) 426-9400:(425) 882-8080:fax (425) 936-7329:http://www.micm soft.com/visuali
- = Price: Not yet available.
- Platforms: Development: Windows 95: Windows HT. Deployment: Win95 and later: NT when using Win32 API features: ony browser-capable plotform when
- using HTML = Ship date: Second half of this year.

Maggie Biggs is a senior analyst at the InfoWorld Test Center. She can be reached at maggie_biggs@info world.com.

account for personalization, such as each user's personal data directories and application settings. Plus,when installing an application Windows NT generally doesn't let the user choose whether the application will be used commonly across all users or just by the user who installed it. **Enhancing NT**

Microsoft has made some enhancements to the Windows NT base to accommodate these issues. For example, when installing new applications I was able to toggle the user mode of the OS between install and execute modes. Optionally, using the Add/Remove Software interface in the Windows Control Panel, I was able to choose whether new applications should be installed for all users or just the user who is currently logged on. After you actually install an ap-

THE BOTTOM LINE

Microsoft Windows Terminal Server, beta

such as a text file. The OLE DB

Windows Terminal Server — code-name Hydra --- gives users access to 32-bit Windows applications running in remote server-based sessions. However, Citrix's Picasso add-on is required for getting the best value out of the platform.

- Pros: Improved performance: undates to Policy Editor User Manager and command-line to support OS enhancements; some prebuilt application com-Cons: Base Windows NT lacks appropri-
- ate infrastructure.
- = Microsoft Corp., Redmond, Wash.; (800) 426-9400; fax: (425) 936-7329 http://www.microsoft.com
- = Price: Undetermined. = Platforms: Server: Intel and Alpha
- based servers: Clients: Windows for Workgroups 3, 11, Windows 95, Windows NT Workstotion, and Windows CE for Windows-based Terminals. = Ship date: Second quarter.

the Windows Registry anomalies that were referred to earlier. In this beta release. Microsoft has provided a few prebuilt application compatibility scripts for various programs, including Microsoft Office, Corel Office, and Netscape Navigator. I found that the dozen or so prebuilt scripts worked pretty well, but they are pretty limited given the wide range of applications out there that you might want to run.

I'm sure that Microsoft will add to this number before the product ships, but it's doubtful that they will support very many applications on their own.

Going forward, Microsoft will require their Windows logo partners to provide multiuser compatibility in their products. Until then, you will have to write scripts of you own to support your full complement of applications. Products like this are supposed to make your life easier, not create more work.

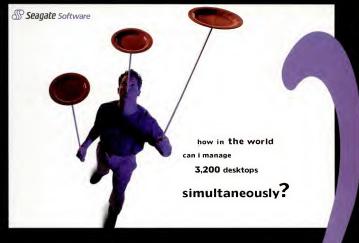
Even after you have tweaked the basic anomalies, some applications still require that additional scripts be run when the user logs in. Again Microsoft accommodates some of this with prebuilt scripts, but there

are not enough to go around. Man the command-line

I did find some improvements to the base operating system. For example, Microsoft has bolstered the Windows NT command line with a number of WTS related commands. I was able to actually query remote user sessions and processes and kill user processes from the command line

Overall, WTS show some performance improvements. However, the important shortcomings in the areas of application compatibility and solid distributed profile management will not be addressed on a meaningful scale until Windows NT 5.0 delivers a few core improvements to the base operating system.

Senior Analyst Jeff Symoens reviews enterprise platforms and services at the InfoWorld Test Center. He can be reached at jeff symoens@infoworld.com.



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SQL-Station is an ideal tool for working with Oracle's PL/SQL

By Eric Hammond

LATINUM SQL-Station/Team, Version 3.1, is a heavyweight contender in the server-side database development tool arena. It is an end-to-end tool for developing code such as Oracle's PL/SQL. It includes editor and execution environments, a debugger, a code analyzer and an optimizer.

The product features tight integration with the database, ensuring that changes are immediately reflected. Also, the team version of SQL-Station includes tools for managing code in a team development environment.

During my review I scratched the surface of SOL-Station's feature set. but I found a robust foundation that provides excellent productivityenhancing tools for easing the somewhat arduous task of developing server-side database code.

If you are accustomed to developing PL/SQL in a text editor and then writing and managing all of the scripts necessary to manage the application, you will find that SQL-Station offers an impressive array of tools for making the process better.

Between Oracle8 for Windows NT's easy setup and Platinum's no-brainer installation, I had a SQL-STATION'S table lookup lets you quickly locate an object and create statements.

complete client/server database the Data Definition Language development environment running in less than one hour.

Platinum uses the same approach to a visual development tool that Microsoft uses in its tools. In fact, the tools are compatible, providing a complete front-to-back-end database development environment. I liked SQL-Station's Catalog Browser, an Explorer-like interface that let me browse database objects by any number or sort criteria, for example, by users and object type.

On each object in the Catalog Browser, I could right-click and receive a context-sensitive set of commands that I could use on the object. When I selected the tables object for a given user, I was able to create a new table for that user (assuming that I had the proper authority) simply by selecting the New Table option.

When creating a table, SQL-Station pops up a simple and intuitive box for defining the table's attributes and adding columns. Once the table name and a column were defined, I could click on

tab in the window to see the SOL code that SOL-Station would execute to create the table.

Just as you can define tables in SQL-Station, you can create code to execute against those tables, Old-timers will appreciate the ability to quickly enter and execute statements in the editor window, while database programming newcomers will appreciate the ability to step through the coding process through a variety of wizards. And Rookies will appreciate the ability to continuously view the code SQL-Station generates.

For automatically generating code, SQL-Station offers several options. Right-clicking on an object such as a table gives one the option to automatically generate and insert, update, delete, or select a statement for that table, with the statement populated with sample data taken from the table.

Also, you can use SQL-Station's table lookup function to find a particular object in the database and then generate the same types of statements for the object you locate. These statements can then be dragged and dropped into your existing code.

SOL-Station's Generate Package command, available by right-clicking on an object, will create a package of procedures that work on the selected object. These can then be used by developers, It is basically a canned version of every type of operation you would want to perform on an object, in one tidy script.

In addition to its powerful coding environment, SQL-Station includes a full-featured debugger that allows you to set breakpoints, view variables, and step through code, among other functions. The debugger expands and enhances the capabilities of Oracle's PL/SQL debugger and works with or without it

Put all of these pieces together and you have a world-class data-

Platinum SQL-Station/Team Version 3.1

SQL-Station provides a complete environment for developing server-side database code such as Oracle's PL/SOL. The product includes an editor, a debugger, and an optimizer, as well as tools for managing source code in a team development environment.

- Pros: Intuitive interface similar to Microsoft's visual development tools: full-featured implementation with many ways to do the same thing; works
- in real time with the database. Cons: Fully supports only Oracle databases: expensive.
- = Platinum Technology Inc., Oakbrook Terrace, NI: (800) 447-6861: fax: (630)
- 691-0718; http://www.platinum.com. m Prices Starts at \$3,995 per sent
- = Platforms: Windows 95 and Windows NT Works with Oracle7 and Oracle8 as well as limited support for Sybase SQL Server, Microsoft SOL Server, and OOBCcompliant data sources.

base development tool. If you develop back-end code, especially for Oracle databases, you owe it to yourself to check out SOL-Station.

Eric Hammond is a technology analyst at the InfoWorld Test Center, He can be reached at eric ham mond@infoworld.com.

► Internet-access phone

iPhone easy to grasp but weak in screen quality screen keeps this slick machine

By Howard Millman HE FIRST Internet-access

phone has arrived. Cidco's iPhone offers a 7.4-inch touch screen, extremely easy access to the Web and to e-mail, and a variety of standard and advanced telephony features. An internal 14.4Kbps modem handles analogto-digital data translations with surprising speed.

For corporate users, iPhone's portability and fast setup makes it an ideal device for occasionally accessing the Internet or for exchanging e-mail. A user can learn how to use the device in fewer than 5 minutes. In selected vertical markets, such as the hotel or education industry this short learning period could prove to be a bonanza. As a stand-alone device, iPhone

is not meant to connect to either a computer or a network, so setup takes mere minutes. To activate this quintessential plug-and-play device, you need to do no more than insert a couple of plugs before it's ready for use. You will have to register it first, but that's also simple. Auxiliary services include Yellow

Pages directories, news, weather, movie listings, and sports. To activate the service, just touch its icon with the supplied plastic stylus. A small, pull-out QWERTY keypad enables you to key in alphanumeric text for use in search engines or for composing e-mail messages. Cidco will offer a larger, detachable keyboard in March and a proprietary thermal printer in the near future. The keyboard will cost approximately \$40, and the printer will cost about \$150. It uses a proprietary browser,

but it's one that is easy to learn. As with the major browsers, you can set bookmarks, move back and forward, and enter specific URLs using the pull-out keyboard.

Desperately seeking color Unfortunately, the lack of a color

laptops and handheld computers. It suffers from the same malady that eternally plagues passive-matrix LCD screens; lack of contrast and clarity. Even at a 640-by-480 resolution, iPhone's backlit monochrome screen lacks enough contrast for easy reading. You will more likely

from posing a serious challenge to

l anticipated sluglike performance from the device because it uses a nonupgradable 14.4Kbps internal modem. But it pleasantly surprised me. Despite the slow rating, the modem performed well, often surpassing the performance of my desktop unit.

find yourself analyzing the screen's

contents instead of reading it.

To some degree, that's attributable to the device's lack of a color screen. (Mono images and text require less bandwidth because they contain less information.) Cidco's designated ISP, Concentric Network, provides full access to the Internet. The ISP also strips the incoming data of color information before relaying it to the iPhone, In June, Cidco plans to release a software update that will allow users to connect to any ISP.

To navigate in the absence of a mouse, you use four scroll keys. Stabbing the up or down scroll key quickly moves the screen a page at a time; keeping it depressed moves the screen a line at a time.

Used strictly as a new-age phone, iPhone provides speed dialing, a personal phonebook and an integrated speakerphone. All features are intelligently accessible via six primary icons.

The phone unit supports custom services, such as Caller ID and Call Waiting. Although you can subscribe to your local telephone company's optional voice mail service, I would rather see the company offer a digital answering machine option.

The one improvement that the iPhone needs most is a color screen. Although Cidco tactfully sidestepped questions about upgrade plans, it appears a color screen is

ITTE This plug-and-use telephone provides

Internet access and e-mail, plus advanced telephony features. " Pros: Easy to configure; easy to use. Cons: Needs a color screen; relatively

- expensive. = Gdco Inc., Moroan Hill, Calif.: (800)
- 398-9384: http://www.cidca.com. Price: \$499:ISP service \$19.95 per manth with unlimited usage, or \$9.95

several months away. Even without color, however, I think that the iPhone's ease of use and setup make it worthwhile for occasional Web and e-mail access.

Howard Millman operates the Data System Service Group, a vendor independent networking, problemsolving, and systems' engineering consultancy located in Croton, N.Y. He can be reached at hmillman@

ihm nor

END AROUND

FROM THE ETHER · BOB METCALFE

eFusion lets you use a single telephone line to view a Web page and talk on the phone

R 122 YEARS we've been growing the telephone network. For 29 years we've been growing the Internet. And it's still not clear how long it will take to

incorporate the circuit switching of telephones into the packet switching of the Internet. Many companies are introducing

products that combine the telephone and Internet networks, One such is eFusion, an Intel spin-off in Beaverton, Ore.

Ajit Pendse is CEO of eFusion. He has held various positions at Intel, including director of strategic partnerships. He developed alliances with telephone local exchange carriers (LECs) during Intel's ill-fated ProShare

ProShare was supposed to provide personal computer video and data conferencing over ISDN. However, after years of working with the clueless LECs on deploying ISDN and spending hundreds of millions of dollars, Intel was forced to admit that ISDN wouldn't make it. Andy Grove sadly admitted we're stuck with dial-up telephone modems for the foreseeable future

So Intel spun off much of ProShare, Parts became Microsoft NetMeeting, now "integrated" into Windows. Other parts got spun off as eFusion along with Pendse and some

eFusion makes telephone-Internet gateways for sale to Internet service providers and corporate call centers. These gateways fuse the Web and the telephone network using a conferencing standard called H.323. Say you've dialed your PC in to an ISP and

are shopping on the Web. You find an interesting product. In browsing for information about the product, you reach a point where you'd like to talk to somebody knowledgeable about it.

So you click on eFusion's Push-to-Talk button. Soon vou are talking via your Internetconnected PC to an agent in the call center of the company selling the product, What's more, the agent is automatically looking at the same page on the Web that you are, and he can move with you through subsequent Web pages.

You're still dialed in to your ISP. Your voice is carried through the Internet using H.323 inside IP packets intermixed with IP packets carrying Web downloads. An eFusion gateway carries your voice between the telephone network connected to the company's call center and your Internet-connected PC.

For a demonstration of eFusion's Push-to-Talk, take your Internet browser - Microsoft or Netscape - go to http://www.efusion .com/pttsetup. You will need a multimedia Pentium PC running Windows 95 and H.323

Internet phone software — for example Microsoft's NetMeeting or Intel's Internet Video Phone. The demo requires a free one-time download of eFusion's Internet Call Assistant helper application.

When I tried it, the agent's voice was clear, and eFusion's linkage to Web pages was effective in expediting my Web transactions. Let me know how your

Now, it can vary where Internet voice packets are converted into telephone conversations. The selling company can have an

eFusion gateway on premises connected directly to its Web and call-center servers. Or, the gateway can be at the ISP of the selling company. Or, the gateway can be at your ISP.

Of course, today's Internet isn't all that good at carrying telephone calls, especially during rush hours. And so eFusion offers another mode of fusing Web and voice. If telephone quality degrades, your PC

can hang up its ISP connection into the Internet and call the sell-

ing company directly over the telephone network The continued H.323 conversation be-

tween your PC and the selling company is still carried over IP. It's just that the IP is carried over a private telephone line with fixed bandwidth and delay, so the voice will be of busi-

Another feature offered by eFusion is Internet Call Waiting. When using your only telephone line for Internet access, someone making a phone call to you ordinarily gets a busy signal. Now, if your ISP

has an eFusion gateway, a dialog box can appear on your PC browser screen announcing an incoming phone call. You then decide whether to take the waiting call through your PC over your Internet connection.

Pendse is so impressive I've invited him to speak at Vortex98, my new telephone-Internet convergence conference, May 20 to May 22. For more information see http://www.vortex98.com. And oh, by the way, at Vortex98 we'll be celebrating the first 25 years of Ethernet.

Technology pundit Bob Metcalfe invented Ethernet in 1973 and founded 3Com in 1979. and today he specializes in the Internet. Send e-mail to metcalfe@infoworld.com.

NOTES FROM THE FIELD BY ROBERT X. CRINGELY

In the midst of marketing madness, Bobby finds he may have got a bite

OME HAPLESS FLACK has got me tied up on an obscure 3-D graphics mailing list and I've been getting 75 furious e-mails a day from people trying to unsubscribe. It's amazing how mad it's making my fellow spam victims. People

who think nothing of walking up the stairs at home carrying two fistfuls of junk mail from the local supermarket go absolutely ballistic when it happens in digital rather than analog form, and as I'm getting RSI hitting the delete key, I

can see why. PointLess? I remember the sink-

ing feeling I had when I went to the launch of PointCast and realized that even my

screen-saver was morphing into a digital marketing tool. I'm glad to say that after the initial babble about hockey stick curves (TM) and paradigm shifts (TM) the whole

push thing has degenerated into another solution in search of a problem. Of all the vendors out there, the only one with any corporate credibility at the moment seems to be Back Web, which is continuing to expand its moves into the enterprise

space and is planning to add back-end server links to Enterprise Resource Planning packages from SAP and PeopleSoft later this

Universal Soldiers meets Monty Python

You may remember a while back some rumors about Microsoft planning its own universal virtual machine, as a counter to the Java virtual machine. Of course the kids in Redmond denied it every way from Sunday, Turns out they did

actually try it, but abandoned the whole gimmick once they saw all the portability issues that the JVM was hitting. These are kids, but they're smart kids; When they saw the cross-platform vision was a Holy Grail that nobody was going to reach anytime soon, they did the smart thing, and gave up. After all, it's not a platform, it's a language, right?

With 5-Speaker, U-R-There Ambisound!

I hear Compan has been using an old Walmart warehouse in Austin to interview engineers for a new project. The company has decided to return to manufacturing widescreen monitors for the home user. There's obviously a big business opportunity in providing PC power as part of a really kickass home entertainment center. At the touch of a remote control, a new generation of six-hundred-pound couch potatoes can channel surf between World Wide Wrestling and the World Wide Web. It makes sense that the company is looking into new markets now that the server gig is getting tough. Look out for a Compaqsponsored monster truck event near you

Pixel is a bright little spark

There is one benefit to this horrible spam business. I've struck up an e-mail acquaintance with a charming fellow spammee called Pixel. In her e-mail she says she's designing Web sites in Bellevue, and that she thinks I'm "kinda cute, in a double latte khaki 401(k) sorta way." I'm pretty sure she'll turn out to be an unemployed truck driver from Texas. In the meantime, we're planning to go real-time online - soon.

Give me a hot tip so I can impress Pixel with my inside dope, Call me at (650) 312-0555; fax (650) 286-2775; or send e-mail to me at cringe@infoworld.com.

THE END

DOWN TO THE WIRE · NICHOLAS PETRELEY

ISPs need a crash course in the many benefits of IMAP4 e-mail over POP3

IEW ISPS OFFER IMAP4 e-mail service. but it is time they did. I've had about all I can take from the consequences of using POP3. POP3 is a terrible e-mail configuration if your client is unstable.

Case in point: Windows NT began giving me the blue screen of death (BSOD) at least once daily last week. As if this wasn't enough trouble, I lost the disk drive where I keep all of my data. Although I confess I'm not diligent about making backups, I was able to catch up in a day or two. On the down side, I had hoped that the failing drive was the cause of the frequent BSOD problem. It wasn't.

Although I can eventually cure the BSOD problem by reinstalling Windows NT and my applications, this was editing hell week at NC World. The reinstallation had to wait, crashes or no crashes. Unfortunately, there were more crashes than no crashes

This leads me to what I hate about POP3 vs. IMAP. IMAP leaves your mail on the server, and lets you manage it there. You download mail headers and then choose which messages you want to retrieve. save, or delete. This makes it a bit harder to work with mail offline, but it's certainly possible. And if your system crashes, your mail remains fully intact at the server.

Most POP3 clients give you two options for retrieving your mail. You can set them to leave all of your mail at the server or delete it all as you retrieve your messages. The former is most useful if you need to switch mail clients occasionally, as I must. And you will need to choose that

top to laptop.

option if you travel. But there are drawbacks to leaving your mail at the server. You end up with tons of spam or multimegabyte attachments that you will download over and over again each time you switch clients or move from desk-

I started out using Netscape for its HTML capabilities. But if POP3 didn't behave the way it does. I would switch to the Lotus Notes 4.6 client in a heartbeat. Notes is such a flexible programming environment, you can get it to recite the "Gettysburg Address" backward in French as it filters and routes messages to various database archives. I've got Notes set up to switch between three POP3 server accounts at the click of an icon. I've added special database fields to help me

manage my mail better. And Notes is the only client that doesn't mangle the embedded HTML tags in the articles I send to my production crew for NC World. Unfortunately, one of the few things I can't figure out is how to get Notes to delete individual messages from any of the POP3 servers.

Spam seeker

So I have been using Qualcomm's Eudora Pro 4.0 (http://www.gualcomm .com). Eudora allows you to select and delete individual messages from the server.

I've even set up some reliable filters that detect spam, move it to a junk folder, and automatically delete it from the server.

But as much as I like Fudora, it mucks up HTML tags, has bugs aplenty, and lacks some important features such as the ability to easily backup and restore mailboxes. Unless I

soft's J/Direct technology, which eases Java

calls directly to the underlying OS. And J++

is the only development environment to de-

Microsoft has accelerated industry accep-

tance by licensing this speed-up technology

to leading tool vendors such as NuMega, Ra-

tional Software, and Sybase (PowerBuilder).

Combining those companies'Windows "pres-

ence" with the Apple relationship, Microsoft's

unified desktop front ensures

But developers aren't being

forced to use it. They can use

I++ 6.0 to write cross-platform 100% Pure lava code.

But even Microsoft doesn't

recommend this, unless you

want cross-platform support

through scripting and host-

ing the client function on the

server. Given the challenges

of using J++ for traditional

that I/Direct is here to stay.

But it won't be the only development tool.

liver this speedy version of Java.

mess around with Explorer or use batch files to back up and restore Eudora files, I end up with corrupted Eudora mailboxes after every crash. When Eudora automatically rebuilds the mailboxes, it retrieves mail from the POP3 server that I already have stored in folders. This results in numerous duplicate (triplicate, and more) copies of messages.

Micro Computer Systems' Calypso 2.4 (http://www.mcsdallas.com) is less wellknown than Eudora, but it is one very powerful e-mail client. Calypso allows you to delete individual messages from the server, and it is a bit friendlier about backing up multiple copies of your mailbox database, although that mailbox database grows fast and doesn't compress well. I haven't always had success restoring a backup. But when it works, it works beautifully. The only thing Calypso lacks is integrated PGP (Pretty Good Privacy) encryption, a nice feature in Eudora. There are PGP utilities that make it easy to work around the lack of integration, but I miss Eudora most when I encrypt messages.

As long as I'm stuck with POP3, I'll probably continue to use Calypso. But whatever client I end up with in the long run, I want IMAP4, and I want it soon. And I'm about to start looking for an ISP willing to provide it. How about you?

Former consultant and programmer, Nicholas Petreley is editor in chief at NC World (http://www.ncworldmag .com). Reach him at nicholas_ petreley@infoworld.com, or visit his forum at http://www.infoworld.com.

BETWEEN THE LINES · MARK TEBBE

Microsoft has embraced and extended Java: Did this squeeze the life out?

NY IN THE PC INDUSTRY can tell you the secret of Microsoft's expansion into new technologies: Embrace any new technology when it seems threatening to Microsoft and then extend it in a dramatic vet focused fashion. With Java, we saw Microsoft fully embrace this stunning product during its Dec. 7 Internet lovefest. Last week, Microsoft announced its "extension." lava will never be the same.

On the surface, Microsoft's announcement of Visual J++ 6.0 seems great. It brings all the time-proven features of Visual Basic and Visual C++ to Java developers. Leveraging from Microsoft's potent integrated development environment, J++ provides the tools to move Java development to multitier applications.

But it's what's under the surface that is setting off alarm bells. Core to J++6.0 is Microsoft's new Windows Foundation Classes (WFC). These Java development classes are a superset of its previously available Applica-

tion Foundation Classes (AFC), which were supersets of Java's core Abstract Windows Toolkit (AWT). Got that - this is Microsoft's true specialty, the API embrace

I++, unlike every major Java development tool, does not directly support the Java Foundation Classes (IFC), JavaBeans, or Enterprise Java-Beans. You can get some of these industry standard features to your Java applications through ActiveX.

This design decision exemplifies Microsoft's direction. The company wants to ensure that its special brew of Java runs great on Windows and Macintoshes. This virtual machine will also provide the fastest Java applications by leveraging Micro-

Microsoft wants to make sure that Its special brew of Java runs especially well on Windows.

cross-platform apps, many Java developers have taken to calling this product, J .- . Regardless of name-calling, Microsoft has now extended lava with new nonstandard keywords. With these language "extensions,"

Microsoft is co-opting Java for its own. This extend "reality" shouldn't come as news to readers of this column. I have been sounding the warning bell for more than a

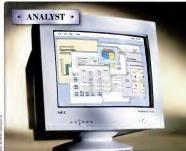
year. In my Feb. 10, 1997, column, I forewarned this embrace when Microsoft alluded to its AFC strategy. I further anticipated this rift in my Aug. 4, 1997, column when Microsoft decided to focus on boxing Sun. And in my Oct. 13, 1997, column, I suggested Sun's decision to sue cast serious doubt on cross platform reality. I even suggested that Apple will have a key role in the eventual embrace.

So, here we sit at that proverbial fork in the road. Down one road are fast Java applications that albeit are seriously tied to desktop OSes. Down the other are slower applications that are platform-neutral Java. This fragmentation of the lava developers creates confusion. Or as Rick Ross, leader of the 13,428member Java Lobby (http://www.javalobby .org), recently wrote to his members, "It is clear that if they [Microsoft] can't own or control Java, then they will do everything in their power to destroy it."

But in an industry where speed is a compelling feature, Microsoft seems to have the upper hand.

Are faster apps just what the Java environment needed to really take off? Will you avoid J++ 6.0 to ensure complete cross-platform compatibility? Send me your thoughts via

Mark Tebbe is president of Lante Corp., a consulting and integration company in Chicago that serves clients worldwide, including several high-tech companies. Send e-mail to Mtebbe@lante.com.









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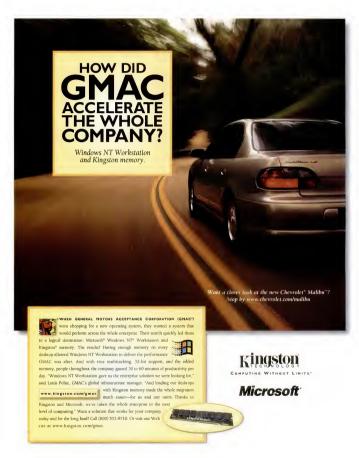
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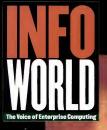
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